



SPECIAL REPORT ON ANADROMOUS STREAM SURVEYS OF CLEVELAND
PENINSULA, INCLUDING EMERALD BAY, VIXEN INLET, UNION BAY,
CLARENCE STRAIT, BOND BAY, SPACIOUS BAY, AND PORTIONS OF
PORT STEWART AND HELM BAY

Subdistricts 101-90 and 101-80

Volume II

By:
John Edgington
Craig Burns
and
Jim Cariello

March 1985

ADF&G TECHNICAL DATA REPORTS

This series of reports is designed to facilitate prompt reporting of data from studies conducted by the Alaska Department of Fish and Game, especially studies which may be of direct and immediate interest to scientists of other agencies.

The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

SPECIAL REPORT ON ANADROMOUS STREAM SURVEYS OF CLEVELAND PENINSULA,
INCLUDING EMERALD BAY, VIXEN INLET, UNION BAY, CLARENCE STRAIT,
BOND BAY, SPACIOUS BAY, AND PORTIONS OF PORT STEWART AND HELM BAY¹

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Alaska Department of Fish and Game
Division of Commercial Fisheries
Petersburg, Alaska

March 1985

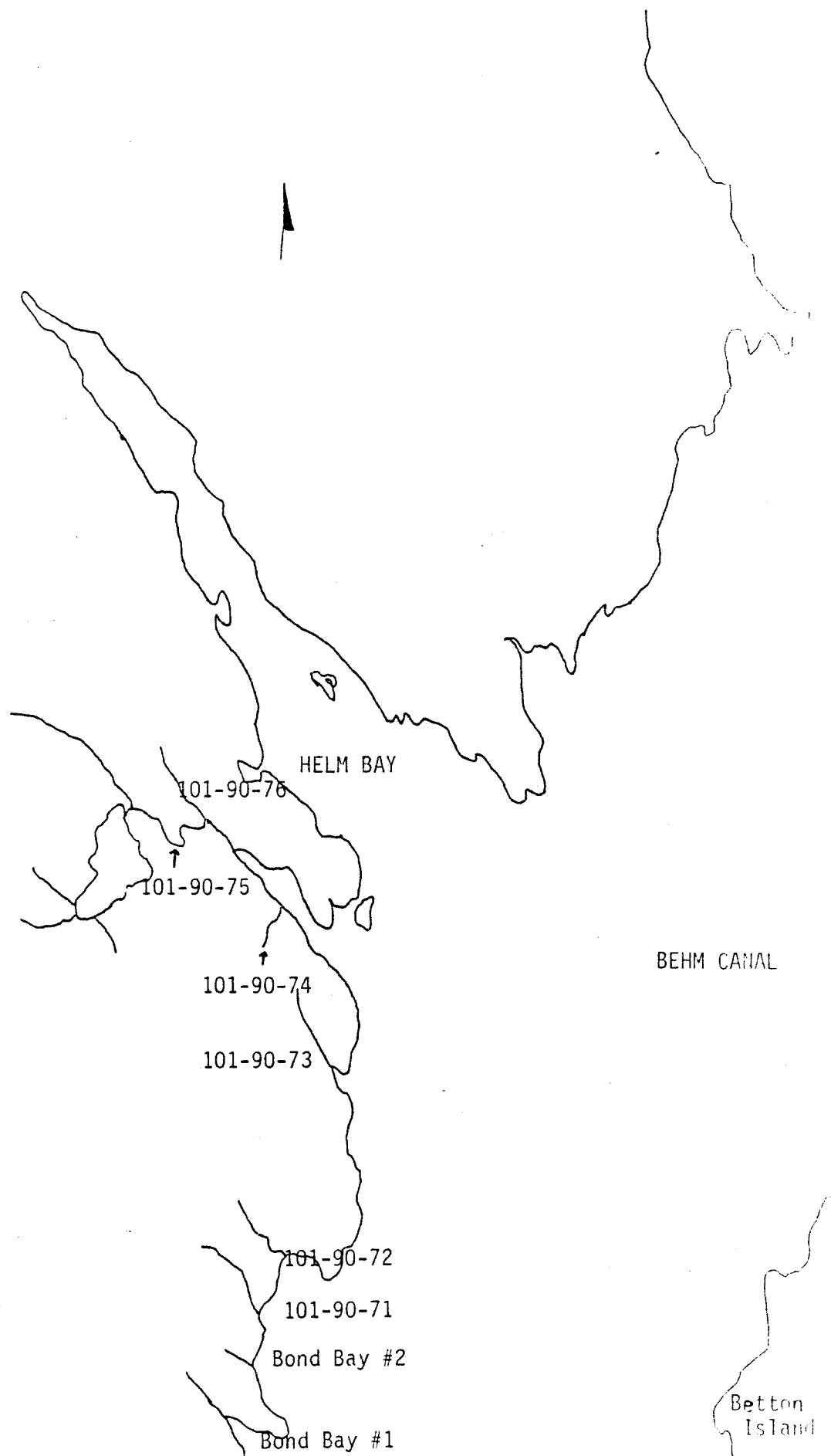
¹ This investigation was partially financed by the U.S. Forest Service, Contract No. 53-0109-2-00116.

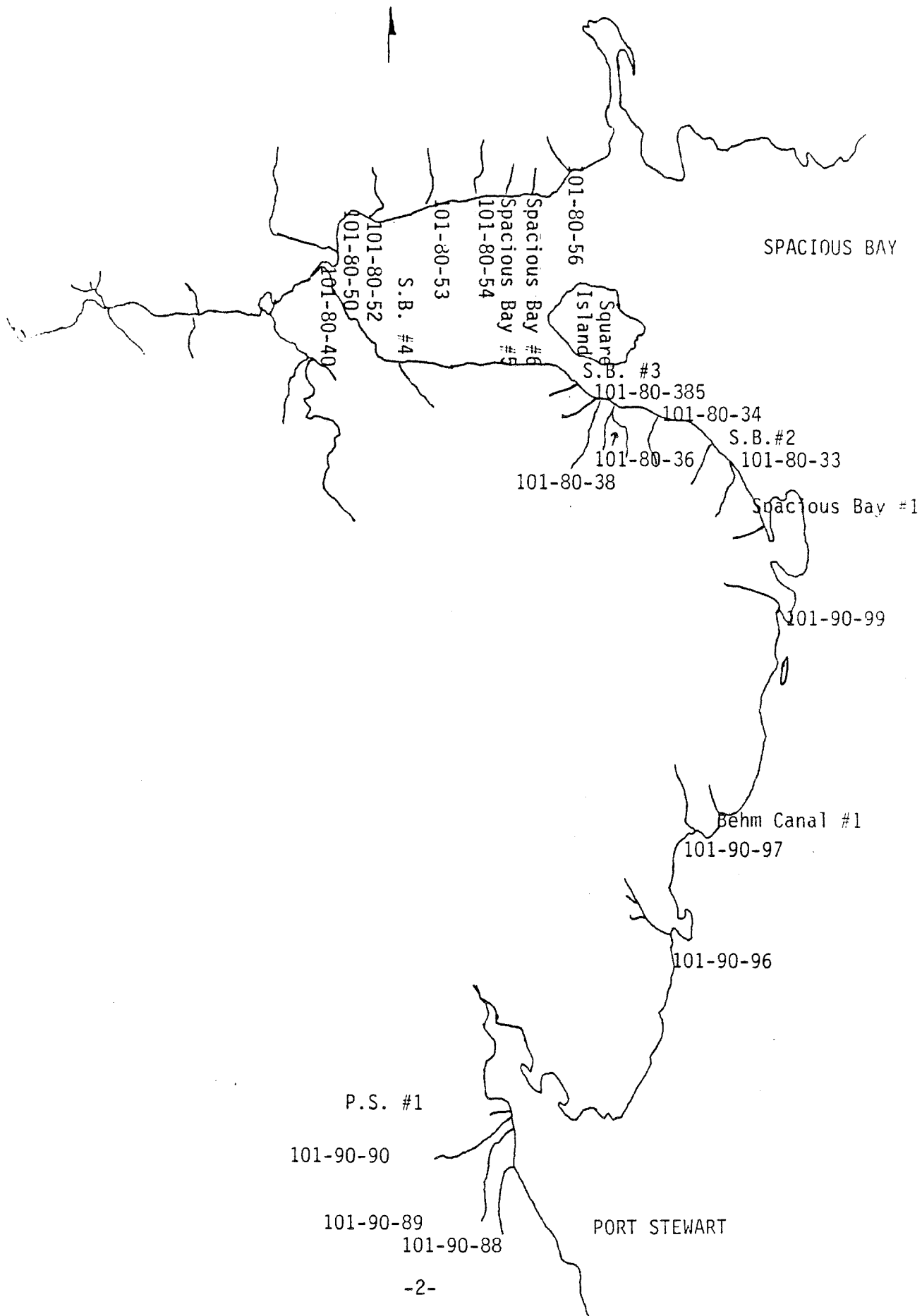
Explanation

This report contains no Table of Contents, Abstract, or any other means of determining what the content is. So I went through the report, and determined that it consists of a catalog of various streams. With this in mind, I set my bookmarks for the PDF file to the individual streams categorized in the report.

Also, the page numbers in the report are inconsistent. The first section (after the first few pages which look to be the same pages that are present in the first volume) would seem to be a continuation of the page numbering from the first section of volume 1, while the second section appears to be a separate publication that has been inserted at the end of the volume.

Mae Tanner
July, 2006





BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-9 2. Historical Fish

Part II.

1. Stream Name Bond Bay #1 2. ADF&G Catalog No.

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,T73S,535

5. Latitude and Longitude 55°30'20" 131°58'30" 6. Agency Unit 05

7. Aerial Photo No. 0029,1373,3,9-12-73,02190 8. MGMT Area K29-714

9. Estimated Flow .05 m³/sec 10. Flow Stage 2

11. Land Use. a. present mining claim b. Historical none observed

12. Temperature Sensitivity and/or origin 5.4

13. Access 2 14. Stream Temperature 10.5°C

15. pH 7.5 16. Intertidal Zone a. Gradient 4

b. Bottom type 1. fines 10 2. gravel/small cobble 20

3. large cobble/boulders/bedrock 70

c. ASA poor - the substrate is predominately boulders and fines

d. Schooling only in the bay

e. Shellfish potential only a few cockles were observed

f. Anchorage good for skiff

17. Comments

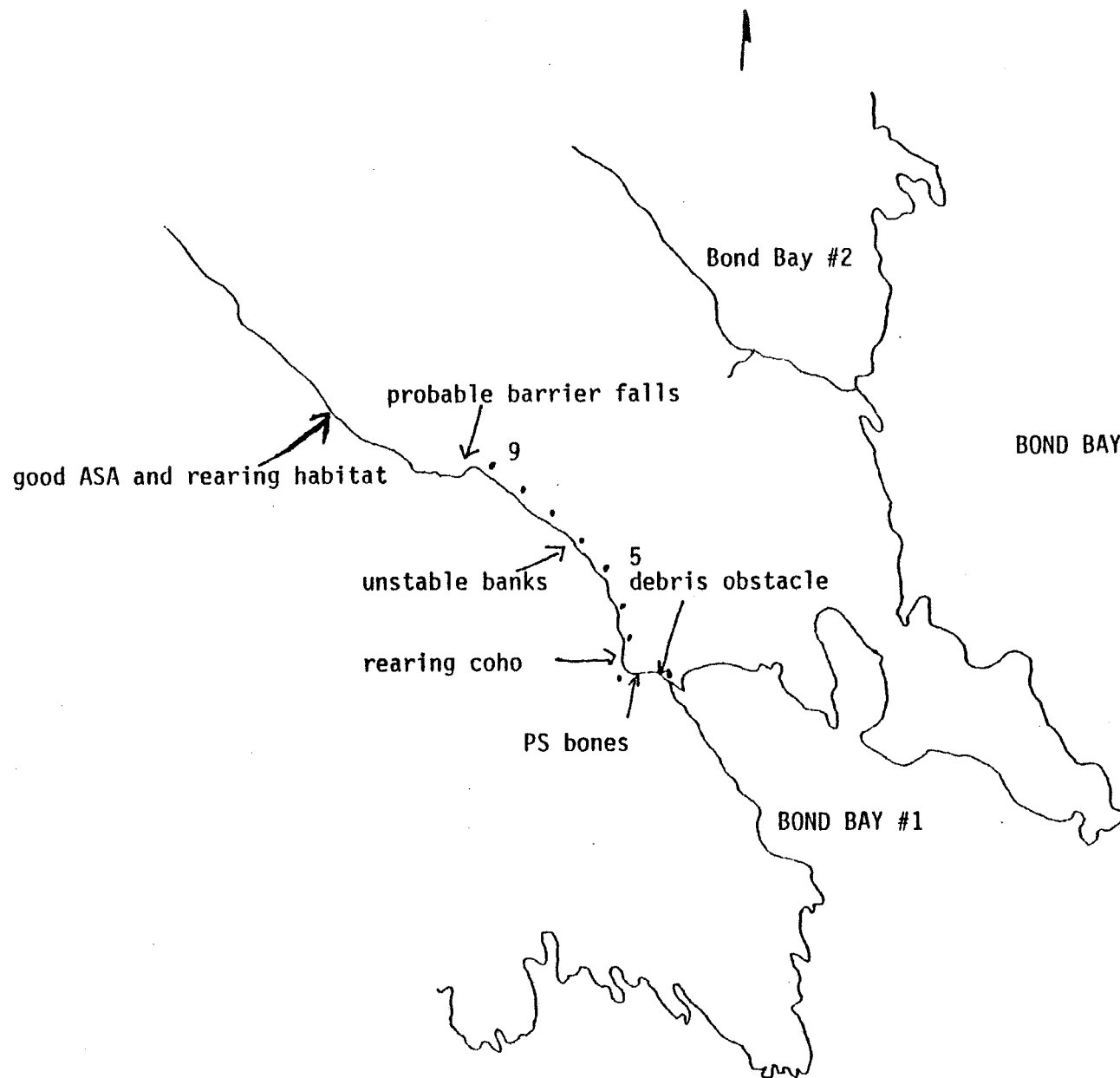
No photos of Bond Bay #1 are available due to a camera malfunction. Bond Bay #1 is not presently catalogued as an anadromous stream, but should be. Rearing coho were observed with regularity in the stream. Salmon bones were quite numerous on the upper banks. A falls/velocity chute barrier is present 900m. from the ITZ. The ASA is only fair quality due to the large amount of sand present and the slow velocity of the present stream flow. The stream provides excellent rearing with its undercut banks and large debris. A lode mining claim that crosses the stream was found and may impact the stream. Although, the survey was discontinued at the barrier, the stream was walked for approximately 400 m. further. This reach above the barrier contains more and better quality ASA than below the barrier. A higher flow would be needed to utilize all of the ASA in this area and consequently could be potential

18. Investigators Burns/Cariello 19. Weather 6

20. Date 6/8/84 21. Time 1400-1700

BASELINE AQUATIC SURVEY, continued

coho habitat. Excellent rearing habitat is available in this area as there is a great deal of undercut bank and large debris.



Bond Bay #1

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	4.7	30	141					
2	100	2.5	15	37.5					
3	100	1.5	1	1.5					
4	100	3.1	10	31					
5	100	3.6	20	72					
6	100	3.8	5	19					
7	100	3.3	0	0					
8	100	2.0	5	10					
9	100	1.5	20	30					
Total ASA				342m ²					

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Bond Bay #1 ADF&G No. _____ Date 6/8/84

1. Reach	1	1	1	1	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	3	4	3	3	4	5	6	5
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	4.7	9.5	4.1	3.1	3.6	4.2	3.3	2.9	7
b. water	4.7	2.5	1.5	3.1	3.6	3.8	3.3	2	1.5
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	80	75	75	85	85	80	65	65	70
SF	15	20	20	15	10	20	35	30	25
US	5	5	5		5			5	5
DF									
8. Undercut Banks (m) left	15	10	20	20	30	20	15	15	5
right	15	10	25	25	70	50	10	15	5
9. Debris Cover % small	1	5	5	5	5	2	2	5	2
large	5	15	15	10	15	10	10	5	5
10. Riparian Vegetation %	10	20	20	15	20	20	20	20	0
11. Substrate %:									
a. boulders			15	20	15	30	15	5	10
b. cobble		5	10	30	20	15	10	10	10
c. gravel	40	35	10	10	20	5	5	20	20
d. sand	60	60	40	40	40	30	30	60	60
e. organic muck									
f. bedrock			25		5	20	40	5	
g. other									
12. ASA	30	15	1	10	20	5	0	5	20
13. Gravel Shape	1	1	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	10	15	13	21	10	13	18	8	21
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	3	-	3	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3	3	3,1	3,1	3,1	3,1	3,1	3,1	3,1
b. density	3	3	3	3	2	2	2	2	2
19. Sampling	Y	Y	Y	-	-	-	-	-	-
20. Rearing Area	75	70	60	75	75	60	55	60	70
21. Comments									

Section 1: Fish bones were abundant on the banks. Skunk cabbage was growing midstream. The ASA gravel contains a heavy sand content and is not good quality. The present water velocity and depth is limiting the ASA also at the present flow. A large log could be an obstacle to PS migration at low flows at the start of the Section.

Section 2: Rearing coho were abundant. The rearing is good quality with excellent cover provided by large debris.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: A potential debris barrier exists. Rearing coho are observed frequently above this barrier.

Section 5: The gradient increases to 7% for the last 50 m. in a boulder and bedrock stretch.

Section 6: Stretches of heavy moss growth are present. The left bank is unstable with areas of shale and soil exposed. There is a marked decrease in the number of rearing coho observed, even though there is still adequate amounts of rearing habitat provided.

Section 9: The survey is discontinued at the end of the Section. A barrier bedrock falls is present 20 m. beyond the end of Section 9. The falls has a gradient of 25 to 30% and is 20 m. long. The vertical rise is 8 to 10 m. Above the barrier, a reconnaissance for a distance of about 400 m. found both better quality and a greater amount of ASA. A larger water flow would be needed to utilize all of the gravel available. There is also excellent rearing habitat provided due to the presence at undercut banks and large debris.

FISH SAMPLING FORM

ADF&G No. _____ Date 6/8/84 Stream Name Bond Bay #1

Survey Area A H₂O Temp. 10.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1405	1615	Ø	Section 1
2	1420	1610	CT-100mm	Section 2
3	1445	1645	CT-87 mm	Section 3

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-12 2. Historical Fish _____

Part II.

1. Stream Name Bond Bay #2 2. ADF&G Catalog No. _____

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,T73S,S-25

5. Latitude and Longitude 55°30'47" 131°57'50" 6. Agency Unit 05

7. Aerial Photo No. 0029,1373,4,9-12-73,02190 8. MGMT Area K29-714

9. Estimated Flow .25 m³/sec. 10. Flow Stage 3

11. Land Use. a. present none observed b. Historical none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 10.5°C

15. pH 6.5 16. Intertidal Zone _____ a. Gradient 2

b. Bottom type 1. fines 25 2. gravel/small cobble 60

3. large cobble/boulders/bedrock 15

c. ASA poor

d. Schooling only in Bond Bay

e. Shellfish potential very rocky - only mussels were observed

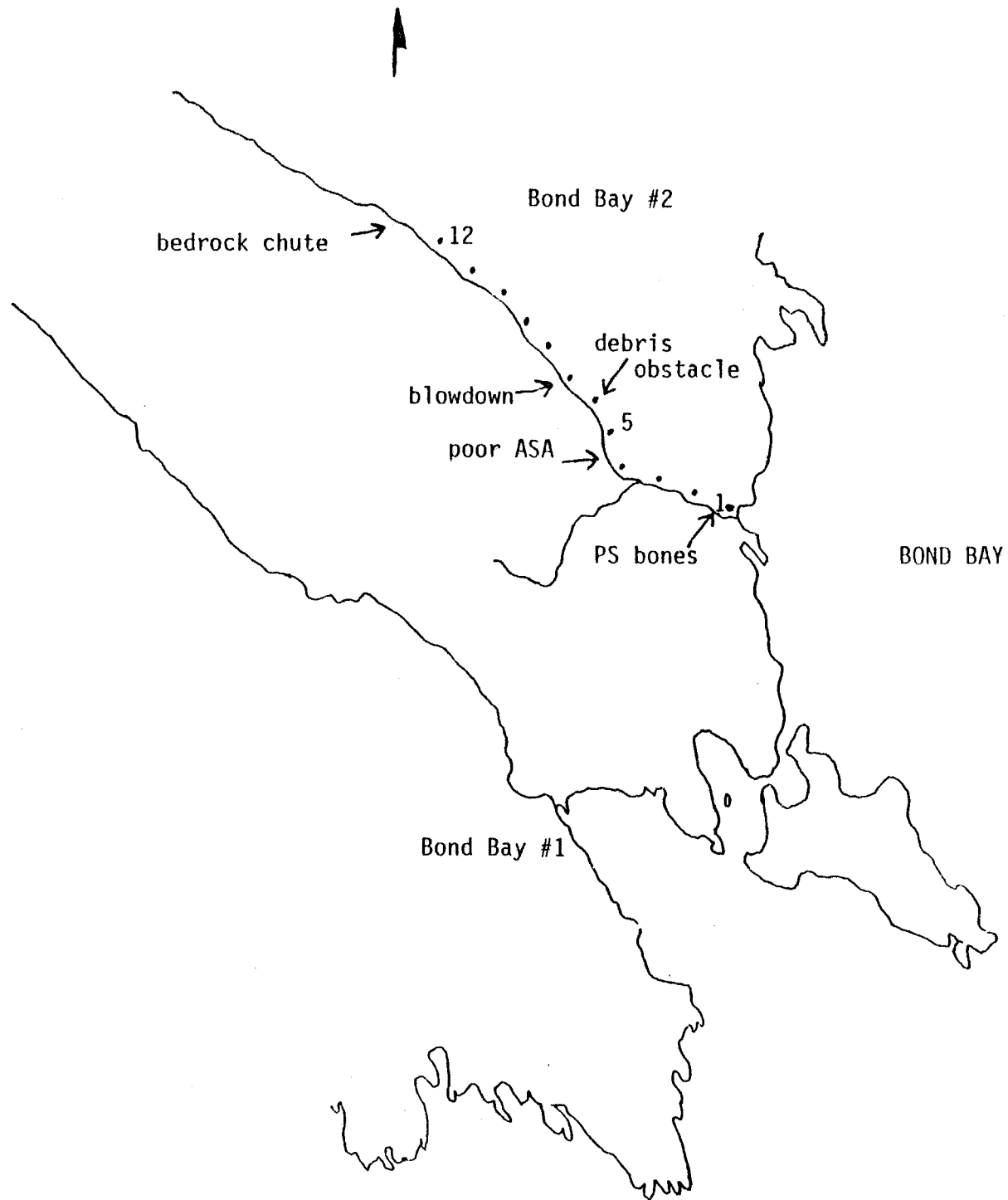
f. Anchorage ½ mile south of mouth is a good beach for a skiff

17. Comments

Bond Bay is not cataloged as an anadromous stream presently, but probably should be. PS bones were found on the banks in the lower reach and fair quality ASA is present up to Section 10. There is a heavy debris load which provides cover and slows the stream velocity. The stream was in flood stage and difficult to survey. The stream was for the most part very swift and the rearing habitat was not good quality.

18. Investigators Burns/Cariello 19. Weather 3

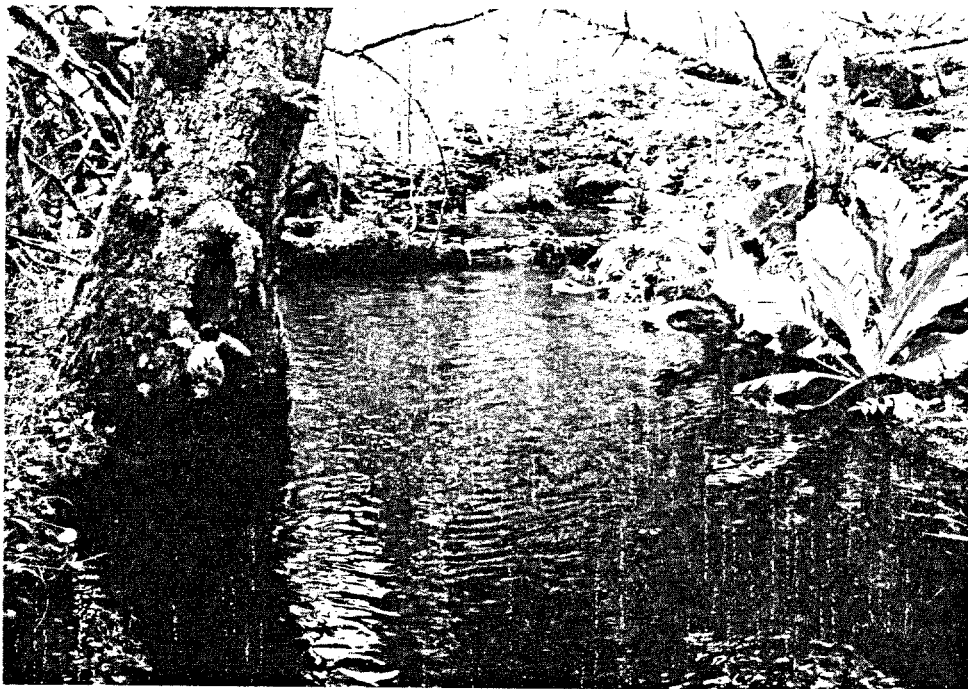
20. Date 6/24/84 21. Time 1400-1700



Bond Bay #2



1. ITZ

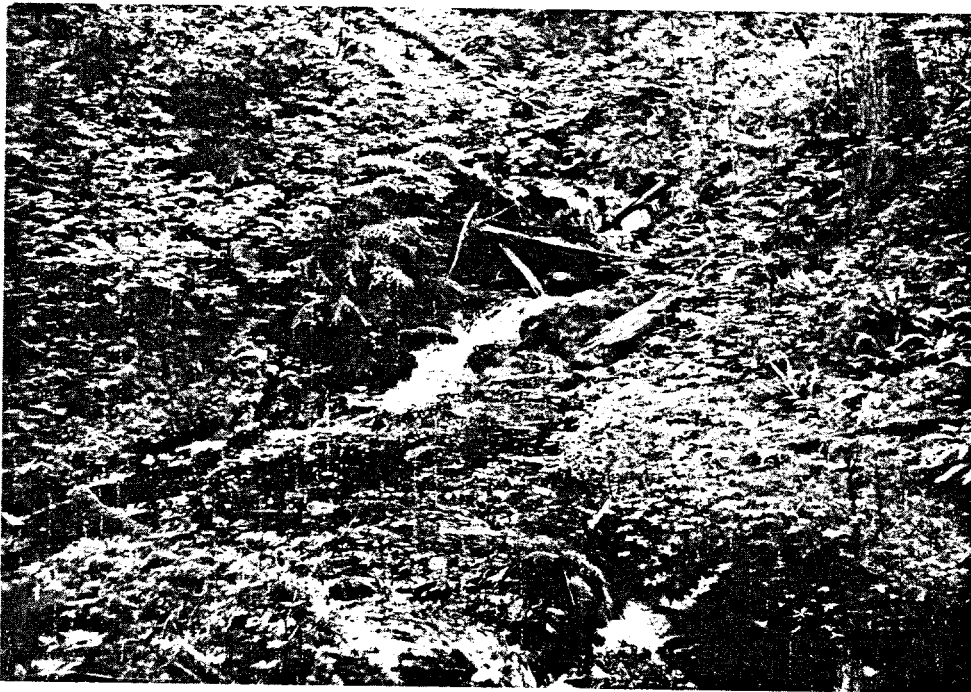


2. Beginning of Section #1.

Bond Bay #2



3. Section #4



4. Probable block in Section #12.

Bond Bay #2

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	4.0	0	0					
2	100	3.4	1	3.4					
3	100	3.6	1	3.6					
4	100	2.7	10	27					
5	100	3.0	20	60					
6	100	2.4	10	24					
7	100	4.0	5	20					
8	100	2.0	10	20					
9	100	3.2	10	32					
10	100	2.0	20	40					
11	100	2.0	10	20					
12	100	1.0	10	10					

Total ASA 260 m²

Available ASA below barrier 94 m²

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Bond Bay #2 ADF&G No. _____ Date 6/24/84

1. Reach	1	1	1	1	1	1	1	1	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	3	5	5	2	5	10	5	4
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. channel	4	3.4	3.6	2.7	3	2.4	4.6	2	3.2
b. water	4	3.4	3.6	2.7	3	2.4	4	2	3.2
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	20	30	30	15	15	20	20	15	10
SF	80	70	70	85	85	80	80	85	90
DS									
DF									
8. Undercut Banks (m) left	30	15	30	25	25	50	50	30	20
right	40	30	30	25	25	50	50	30	20
9. Debris Cover % small	5	5	10	5	5	3	20	10	5
large	25	30	30	20	15	15	65	40	30
10. Riparian Vegetation %	25	20	20	50	30	20	35	70	35
11. Substrate %:									
a. boulders	15				5	5	5		
b. cobble	10		10	25	20	35	50	55	60
c. gravel	25	50	45	40	40	30	25	25	25
d. sand	30	50	45	35	35	30	20	20	15
e. organic muck									
f. bedrock	20								
g. other									
12. ASA	0	1	1	10	20	10	5	10	10
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	20	15	37	5	8	13	10	10	8
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	3	-	-	-
18. Aquatic Vegetation									
a. type	1/4	1,4	1,4	1,4	1	1,4	1	4	4
b. density	2/3	3	3	3	3	3	3	3	3
19. Sampling	Y	-	-	Y	-	-	-	Y	-
20. Rearing Area	30	30	40	30	25	20	10	10	20
21. Comments									

Section 1: PS bones were present on the banks. The stream is in a high water stage making the survey difficult. The gravel is rather compact and contains a heavy concentration of sand.

Section 2: Even though the stream is predominately high velocity, there is a heavy debris load and abundant undercut banks which may provide good rearing in normal water stages. The substrate is mainly a gravel/sand mixture, but there are a few patches of clean gravel which provide good ASA.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: A rearing coho may have been observed, but positive identification could not be made due to the dark color of the water. The stream forks in this Section. The right fork is surveyed. The left fork was heavy with debris and aquatic vegetation, mostly grass. Only traces of ASA of poor quality were present.

Section 4: The ASA is poor quality due to the presence of a heavy sand concentration Sections 4 and 5.

Section 6: A large pile of debris had collected behind a 1.5 m. falls and could be an obstacle to fish passage. There is extensive blowdown made up of predominately rotten hemlock on both banks laying in all directions.

Section 7: A massive amount of blowdown is across the stream from the south bank.

Section 9: The substrate size begins increasing in size.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Bond Bay #2 ADF&G No. _____ Date 6/24/84

1. Reach	2	2	2					
2. Section	10	11	12					
3. Section Length (m)	100	100	100					
4. Gradient	7	6	10					
5. Water Quality	4	4	4					
6. Water Width a. channel	2.5	2.5	1.5					
b. water	2	2	1					
c. special character	-	-	-					
7. Water Type % SS	5	10	5					
SF	95	90	95					
DS								
DF								
8. Undercut Banks (m) left	20	15	15					
right	20	15	15					
9. Debris Cover % small	2	1	1					
large	10	15	15					
10. Riparian Vegetation %	35	15	5					
11. Substrate %:								
a. boulders		35	60					
b. cobble	70	35	30					
c. gravel	15	10	5					
d. sand	15	10	5					
e. organic muck								
f. bedrock		10						
g. other								
12. ASA	20	10	10					
13. Gravel Shape	2	2	2					
14. Streambank Vegetation								
a. percentage	100	100	100					
b. type	B	B	B					
15. Average Depth (cm)	5	10	15					
16. Beaver Activity	5	5	5					
17. Potential Barrier	-	-	-					
18. Aquatic Vegetation								
a. type	1,4	1,4	1,4					
b. density	3	3	3					
19. Sampling	-	-	-					
20. Rearing Area	15	10	10					
21. Comments								

Section 11: The fisheries habitat is minimal in quality and quantity. The stream is uniformly swift with little ASA or rearing area provided.

Section 12: The survey was discontinued at the end of Section 12. The stream enters a bedrock chute/falls which is 2 m. high over vedrock and is a probable barrier.

FISH SAMPLING FORM

ADF&G No. _____ Date 6/24/84 Stream Name Bond Bay #2
 Survey Area A H₂O Temp. 10.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1430	1645	CT-100,90mm	Section 1
2	1505	1635	Ø	Section 4
3	1540	1620	CT-70mm	Section 8

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-9 B 1-12 2. Historical Fish SS,CS,PS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-71

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,T73s,S-24

5. Latitude and Longitude 55°0,31'23" 131°0,57',45" 6. Agency Unit 05

7. Aerial Photo No. 0029,1373,5,9-12-73 8. MGMT Area K30-714

9. Estimated Flow .5 m³/sec 10. Flow Stage 2

11. Land Use. a. present trapline b. Historical none observed

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature 8.25°

15. pH 7 16. Intertidal Zone _____ a. Gradient .5

b. Bottom type 1. fines 10 2. gravel/small cobble 35

3. large cobble/boulders/bedrock 55

c. ASA good

d. Schooling a long fairly deep schooling area is present in the lower ITZ.

e. Shellfish potential only mussels were observed

f. Anchorage fair - Bond Bay subject to SW winds.

17. Comments

A 200 m. long stretch of the ITZ contains potential ASA. The upper 100 m. is probably all that is well utilized. The substrate is loose, but contains a high percentage of cobble.

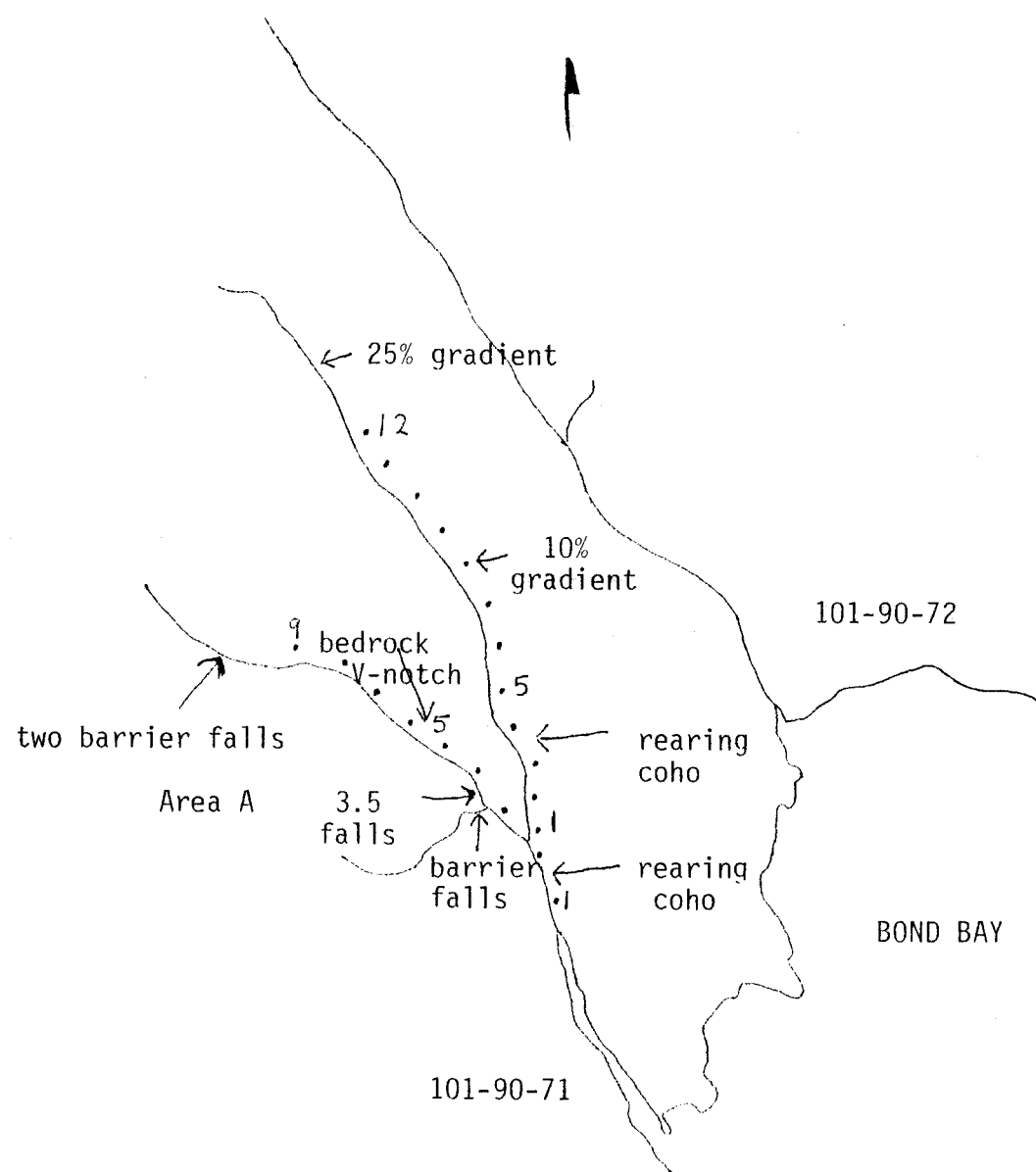
101-90-71 contains good fisheries potential. The ITZ contains substrate suitable for PS ASA and a tributary surveyed as Area B contains good coho habitat. The mainstem contains a 3.5 m. bedrock barrier falls 30 m. into Section 2. Area B contains the bulk of the system's ASA. Area B contained 700 m. of good ASA. A high water stage would be necessary to take advantage of the ASA, however. The water depth was quite shallow throughout Area B. A higher flow would provide more ASA than was available at the time of the survey.

18. Investigators Burns/Cariello 19. Weather 2

20. Date 6/7/84 21. Time 0800-1630

BASELINE AQUATIC SURVEY, continued

The long ITZ could provide ASA, but the bulk of the rearing habitat was found in Area B. A heavy debris load provided an abundance of cover. The stream had a good mix of riffles and pool area. The pools tended to be fairly shallow, however and a high water stage would provide better rearing habitat.

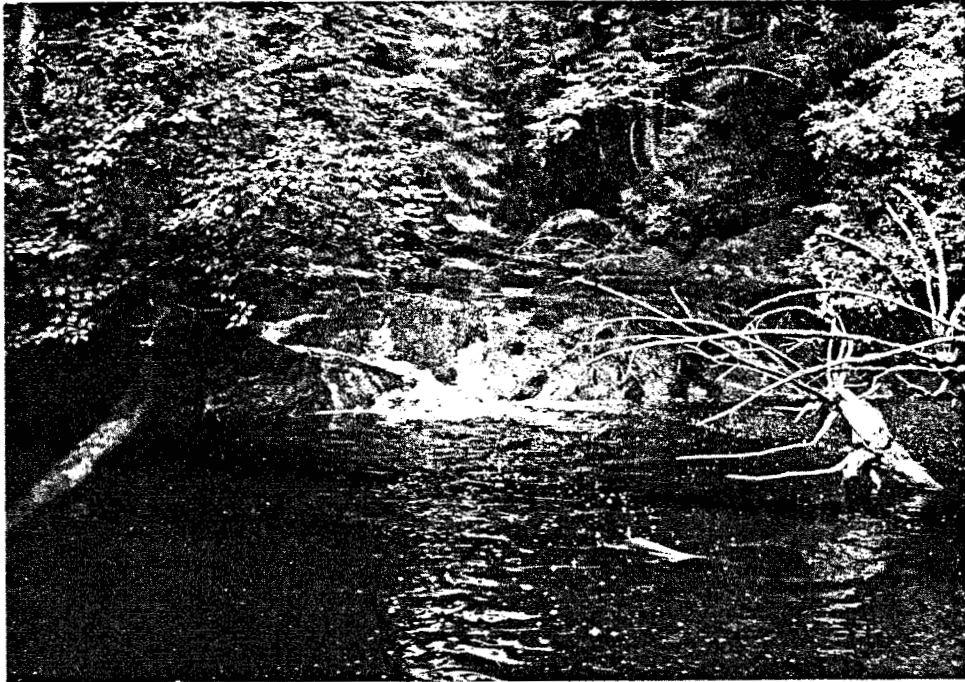




1. Upper ITZ



2. Section 1: Large substrate with little ASA



3. Section 2: Series of small falls
1.5 m. - not a barrier.



4. Section 3: 3 m. barrier falls 30 m. into
the Section.



5. Section 3: Tributary entering from the left bank by the falls.



6. Section 4: Typical habitat above the falls.



1. Section 1



2. Section 3

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	7.8	10	78					
2	100	8.3	1	8.3					
3	100	9.0	1	9.0					
4	100	2.0	0	0					
5	100	3.6	1	3.6					
6	100	4.2	1	4.2					
7	100	5.5	10	55					
8	100	4.4	1	4.4					
9	100	2.9	1	2.9					
Total Area "A"				165.4m ²					
Available ASA below barrier				86.3m ²					
1	100	3.4	25	85					
2	100	4.3	20	86					
3	100	2.5	10	25					
4	100	3.2	40	128					
5	100	2.3	5	11.5					
6	100	2.0	5	100					
7	100	2.5	5	12.5					
8	100	1.0	1	1.0					
9	100	2.1	1	2.1					
10	100	2.0	1	2.0					
11	100	2.7	1	2.7					
12	100	1.5	1	1.5					
Total Area "B"				457.3m ²					
Available ASA below barrier				449.0m ²					

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 101-90-71 Date 6/7/84

1. Reach	1	1	2	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	3	20	8	8	8	6	5	11
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	17	25.8	9	3.5	6.8	6.6	8	9.4	10.5
b. water	7.8	8.3	9	2	5.6	4.2	5.5	4.4	2.9
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	70	60	10	10	10	20	60	45	50
SF	20	15	10	10	5	10	10	35	30
DS	10	20	60	40	45	40	30	20	20
DF		5	20	40	40	30			
8. Undercut Banks (m) left	0	0	0	0	0	0	0	0	0
right	0	0	0	0	0	0	0	0	0
9. Debris Cover % small	0	0	0	0	0	0	0	0	0
large	2	5	0	1	1	0	2	3	2
10. Riparian Vegetation %	1	2	2	5	10	5	5	5	5
11. Substrate %:									
a. boulders	30	30	1	5	5	1	5	5	5
b. cobble	30	10		5	1	1	10	5	1
c. gravel	20	5	1	1	1	1	5	1	1
d. sand	10	5		1	1				1
e. organic muck									
f. bedrock		50	98	88	92	97	80	89	97
g. other									
12. ASA	10	1	1	0	1	1	10	1	1
13. Gravel Shape	1	1	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	15	60	92	50	25	30	8	15	15
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	2	-	-	1	-	-	2
18. Aquatic Vegetation									
a. type	2,3	2,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3
b. density	2	2	2	2	2	2	2	2	2
19. Sampling	-	Y	-	Y	-	-	Y	-	-
20. Rearing Area	60	20	20	20	30	25	45	15	15
21. Comments									

Section 1: Small groups of rearing coho are frequently observed. The ASA is not good quality. The substrate is flat large cobble and the water velocity is rather sluggish. The rearing area has little cover available.

Section 2: A tributary enters from the right bank 60 m. into the Section. The tributary is surveyed as Area B. The main water flow makes a sharp turn to the left and continues into a series of falls over bedrock.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: The substrate becomes bedrock. A tributary with an estimated flow of .04 m³/sec enters from the left bank near the start of the Section. The temperature was 90C and the pH 7. The tributary immediately entered 30 m. of bedrock falls and whitewater which appeared to be a barrier. The substrate is primarily bedrock and boulders above the falls. Patches of ASA banks and overhanging riparian vegetation. No rearing fish were observed. There were some large patches of blue clay on the left bank and stream bottom. A 1.5 m. probable barrier falls with no pool at the base is present 200 m up the tributary. There is a 3.5 m. barrier falls 30 m. into the Section on the mainstem. Fontinalis moss is present.

Section 4: The stream enters a bedrock V-notch. Many deep pools are present, but the substrate is predominately bedrock.

Section 5 "End of survey" flagging found at the end of the Section.

Section 6: A 10 m. bedrock chute with a gradient of 25% is present. It may be a velocity barrier.

Section 7: Some substrate for ASA is available, but the water velocity is rather slow.

Section 8: A small trickle tributary enters from the left bank.

Section 9: The survey is discontinued at the end of Section 9. No rearing fish have been observed since Section 2. A 60 m. Section of bedrock falls and whitewater were observed beyond the end of the survey. Two falls of 3m. and 5 m. in height were present in this stretch.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B ADF&G No. 101-90-71 Date 6/7/84

1. Reach	1	1	1	1	1	1	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	5	5	5	5	4	4	6	10	10
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	14	8	6	3.7	7.4	5	2.9	2.8	2.5
b. water	3.4	4.3	2.5	3.2	2.3	2	2.5	1	2.1
c. special character	-	-	-	-	-	3	-	-	-
7. Water Type % SS	80	75	75	80	75	80	75	70	60
SF	20	25	25	20	25	20	20	20	30
DS									
DF									
8. Undercut Banks (m) left	5	0	15	15	15	15	5	10	10
right	10	0	5	10	5	15	5	10	10
9. Debris Cover % small	5	0	5	5	10	20	5	15	10
large	10	5	10	10	10	20	10	20	10
10. Riparian Vegetation %	15	10	10	15	15	40	20	30	15
11. Substrate %:									
a. boulders	10	25	30	30	50	10	30	50	40
b. cobble	50	49	49	30	35	70	50	25	10
c. gravel	35	25	20	30	15	20	20	5	1
d. sand	5	1	1	1					
e. organic muck									
f. bedrock								20	49
g. other									
12. ASA	25	20	10	40	5	5	5	1	1
13. Gravel Shape	1	1	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	2.5	4	6	5	10	10	5	5	7.5
16. Beaver Activity	5	5	6	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	1	2
18. Aquatic Vegetation									
a. type	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3
b. density	3	3	3	3	3	3	3	3	3
19. Sampling	-	-	-	Y	-	-	Y	-	-
20. Rearing Area	40	50	50	50	50	30	40	30	15
21. Comments									

Section 1: Many rearing coho were observed. The stream is very shallow and has a flow of only .03 m³/sec. The water temperature and pH are 9.5°C and 6.5 respectively. The substrate is predominately flat cobble.

Section 3: PS bones were abundant on the banks. Rearing coho were utilizing the undercut bank for rearing. Patches of blue clay were observed. The ASA is not exceptional quality due to the predominate flat cobble substrate and the shallow depth of the water.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 4: Fontinalis moss was observed. Rearing coho are abundant. A heavy debris load combined with a moderate amount of undercut banks and overhanging vegetation is providing good rearing habitat despite the shallow depth of the stream.

Section 5: Small patches of blue clay were observed again. The rearing coho are utilizing the large flat and angular cobble for cover in the shallow slow areas.

Section 6: The stream braids into two channels for 75 m. The right channel appears to be intermittent in nature. It has better gravel, but is not capable of being utilized as ASA at the present flow.

Section 7: The gradient increases and the heavy debris loading is providing many small debris falls and pools. More blue clay was observed. A .75 m. debris falls is present and the number of rearing coho observed decreases above that point.

Section 8: A 1 m. debris log jam that is a possible barrier at present flow is present.

Section 9: A stretch of bedrock with a total 3 m. vertical rise maybe a possible barrier due to the shallow depth of the stream and the lack of a pool below the obstacle.

FISH SAMPLING FORM

ADF&G No. 101-90-71 Date 6/7/84 Stream Name _____

Survey Area A H₂O Temp. 8 1/4 °C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1205	1245	Ø	coho fry observed Section 2
2	0950	1135	Ø	Section 4
3	1035	1125	Ø	Section 7

FISH SAMPLING FORM

ADF&G No. 101-90-71 Date 6/7/84 Stream Name _____
 Survey Area B H₂O Temp. 9.5°C Bail Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1325	1550	SS-40mm	Section 4
2	1400	1545	Ø	Section 7

101-90-71

-520-

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-15 2. Historical Fish PS,SS,DV,CT

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-72
3. USGS Map No. Ketchikan 4. Legal Location R88E,T73S,S-24
5. Latitude and Longitude 55°31'15",131°57'30" 6. Agency Unit 05
7. Aerial Photo No. 0029,1273,5,9-12-73,02190 8. MGMT Area K29-714
9. Estimated Flow .07 m³/sec 10. Flow Stage 2
11. Land Use. a. present none observed b. Historical portion of drainage
12. Temperature Sensitivity and/or origin 5,4 logged
13. Access 2 14. Stream Temperature 8.5°C
15. pH 7 16. Intertidal Zone _____ a. Gradient .25
b. Bottom type 1. fines _____ 2. gravel/small cobble _____
3. large cobble/boulders/bedrock _____
c. ASA could not be determined, but the substrate appeared silty
d. Schooling in Bond Bay only
e. Shellfish potential only mussels were observed
f. Anchorage poor-not well protected

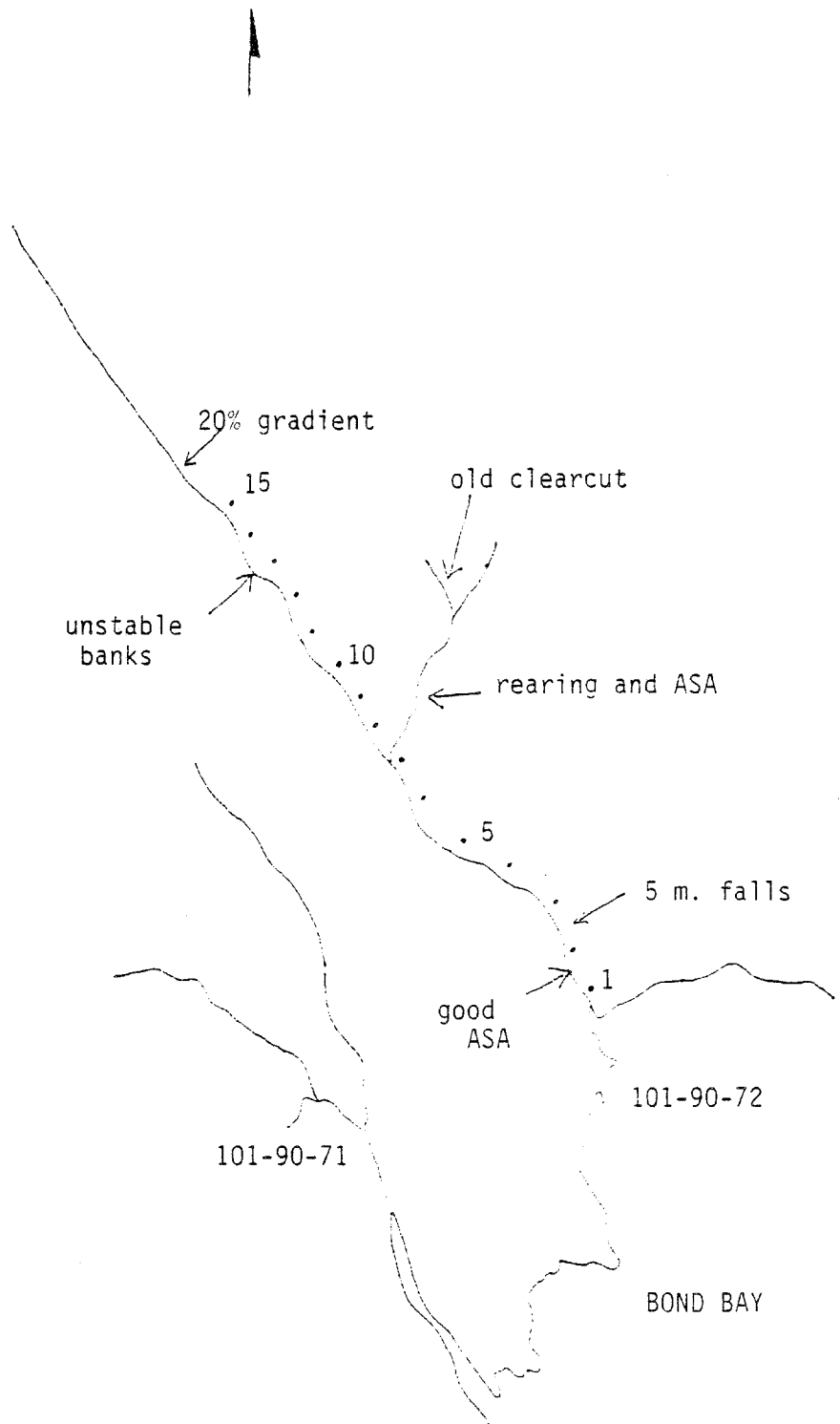
17. Comments

The entire ITZ was covered by an extraordinary driftwood log jam. The debris loading was 100% and it was difficult to determine the bottom type or ASA. Many rearing coho were observed utilizing the driftwood as cover. Two Peterson disc tags were recovered.

18. Investigators Burns/Cariello 19. Weather 6
20. Date 6/8/84 -521- 21. Time 0800-1230

BASELINE AQUATIC SURVEY, continued

101-90-72 has the potential for a sizable run at anadromous fish. The ASA is not exceptional quality due to the flat cobble substrate, a moderate amount of sand present and the rather small flow of water. However, a fair amount of ASA is present up through Section 12. A tributary in Section 7 provides even more ASA. Salmon bones were abundant up the tributary. The rearing habitat is good quality and rearing coho were observed with regularity up to Section 13 where a marked decrease in the numbers of fry observed was noted. The gradient increases dramatically beyond Section 13 and there is minimal fisheries habitat present.



101-90-72

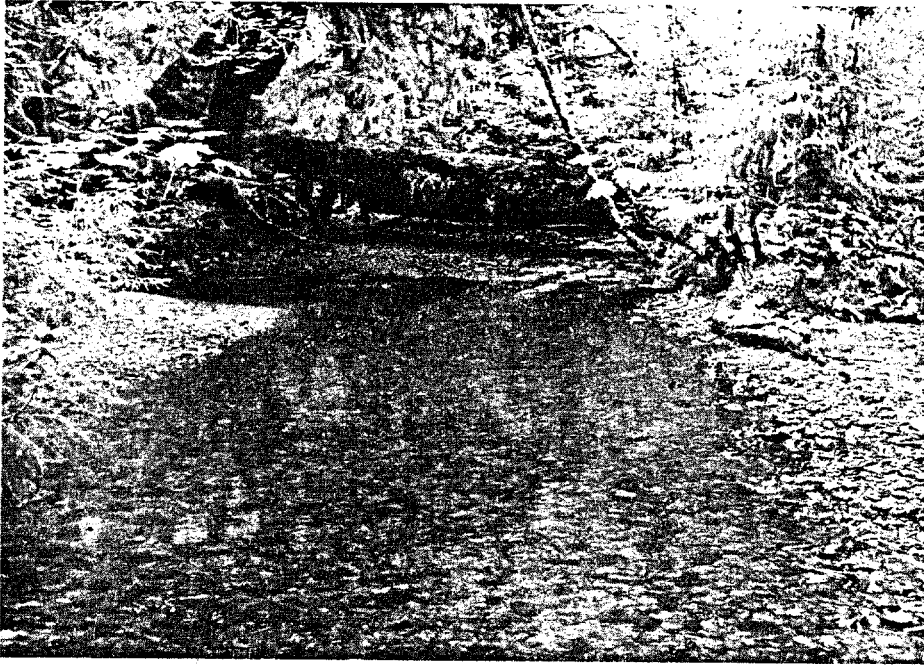


1. Log jam in the ITZ.



2. Section 1: Excellent riffle area.

101-90-72



3. Section 3

101-90-72

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	4.6	50	230					
2	100	8.0	60	480					
3	100	2.6	20	52					
4	100	2.6	30	78					
5	100	4.8	20	96					
6	100	6.2	20	124					
7	100	2.5	15	37.5					
8	100	2.9	20	58					
9	100	9.0	25	225					
10	100	4.0	30	120					
11	100	2.7	5	13.5					
12	100	2.0	5	10					
13	100	3.2	1	3.2					
14	100	1.5	1	1.5					
15	100	3.0	1	3.0					
Total				1,531.7m ²					

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-72 Date 6/8/84

1. Reach	1	1	1	1	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	4	4	5	8	7	6	6	6
5. Water Quality	1	1	1	1	1	1	1	1	1
6. Water Width a. channel	9.2	8	4.8	5	10.7	6.2	5	5.5	14.4
b. water	4.6	8	2.6	2.6	4.8	6.2	2.5	2.9	9
c. special character	1	-	-	-	-	1	1	1	-
7. Water Type % SS	45	35	35	30	30	30	30	30	30
SF	50	60	60	65	70	70	65	65	65
DS	5	5	5	5			5	5	5
DF									
8. Undercut Banks (m) left	5	10	10	5	15	15	15	40	25
right	5	10	30	5	10	10	20	50	25
9. Debris Cover % small	5	5	5	5	5	5	5	5	5
large	10	20	10	20	20	15	15	25	15
10. Riparian Vegetation %	5	5	5	10	25	20	25	35	30
11. Substrate %:									
a. boulders			20	20	30	20	10	5	T
b. cobble	10	30	40	40	35	50	55	60	65
c. gravel	60	50	30	40	25	20	25	35	30
d. sand	30	20	10	10	10	10	15	10	10
e. organic muck									
f. bedrock									
g. other									
12. ASA	50	60	20	30	20	20	15	20	25
13. Gravel Shape	1	1	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	50/50	100	100	100	100	100	100	100	100
b. type	B/C	B	B	B	B	B	B	B	B
15. Average Depth (cm)	8	11	10	10	11	6	6	6	12
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3	3	3	3	3	3	3	3	3
b. density	3	3	3	3	3	3	3	3	3
19. Sampling	Y	-	-	-	-	Y	-	-	-
20. Rearing Area	50	50	40	40	30	30	40	40	50
21. Comments									

Section 1: The presence of riffle areas and an adequate substrate combine to provide good ASA. A small amount of braiding is present within the channel. The rearing habitat provided is good quality with an adequate debris and pool area present. Rearing coho were observed with regularity.

Section 2: A small tributary enters from the right bank. The substrate is not good quality and patches of blue clay were observed. Fish bones were found on the tributary bank, but little ASA is available. A 5 m. barrier falls is 50 m. from the mainstem.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2, continued: Good rearing habitat is provided in the 50 m. below the barrier with an exceptionally heavy debris load.

Section 4: The right bank is unstable for the last 50 m. of the Section.

Section 5: The gradient increases.

Section 6: A trickle tributary with no ASA or rearing area available enters from the left bank.

Section 7: A tributary with an estimated flow of $.02 \text{ m}^3/\text{sec}$ enters from the right bank. The temperature and pH are 8.5°C and 7.5 respectively.

The tributary contains good riffles and ASA for about 150 m. Patches of ASA are found for another 250 m. before the stream starts branching into small forks. Rearing coho were observed frequently, but not in high density. The gravel contained a heavy sand load and a higher flow of water would increase the amount of ASA. Adult PS bones were found on the upper banks.

Section 8: The stream meanders quite severely.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-72 Date 6/8/84

1. Reach	2	2	2	3	3	3			
2. Section	10	11	12	13	14	15			
3. Section Length (m)	100	100	100	100	100	100			
4. Gradient	6	8	8	11	12	13			
5. Water Quality	1	1	1	1	1	1			
6. Water Width a. channel	6.7	3.2	8.2	7.8	3.6	8.5			
b. water	4	2.7	2	3.2	1.5	3			
c. special character	-	1	1	-	-	-			
7. Water Type % SS	30	30	25	20	20	10			
SF	65	65	70	80	80	90			
US	5	5	5						
DF									
8. Undercut Banks (m) left	15	10	15	0	0	0			
right	15	15	15	0	0	0			
9. Debris Cover % small	2	2	5	1	5	5			
large	10	10	20	10	20	25			
10. Riparian Vegetation %	20	20	30	30	30	15			
11. Substrate %:									
a. boulders	5	5	40	80	80	80			
b. cobble	65	70	30	15	10	10			
c. gravel	25	20	30	5	5	5			
d. sand	5	5	T		5	5			
e. organic muck									
f. bedrock									
g. other									
12. ASA	30	5	5	1	1	1			
13. Gravel Shape	1	1	1	1	1	1			
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100			
b. type	B	B	B	B	B	B			
15. Average Depth (cm)	7.5	6	7.5	10	10	5			
16. Beaver Activity	5	5	5	5	5	5			
17. Potential Barrier	-	-	-	-	-	-			
18. Aquatic Vegetation									
a. type	3	3	3	3	3	3			
b. density	3	3	3	3	3	3			
19. Sampling	-	-	Y	-	-	-			
20. Rearing Area	30	30	30	30	25	20			
21. Comments									

Section 11: The gradient is increasing and there are more plunge pools present.
 Section 13: The gradient increases to over 10% and the fisheries habitat potential becomes severely limited. The substrate becomes primarily boulders and there little ASA. A marked decline in the number of rearing coho was observed. Mass wasting was present on the right bank at the start of the Section.
 Section 15: The upper banks continue to be steep and was stable. Several debris falls were present that could be possible barriers. The survey was discontinued at the end of the Section. The gradient increases to 20%.

FISH SAMPLING FORM

ADF&G No. 101-90-72 Date 6/8/84 Stream Name _____

Survey Area A H₂O Temp. 8.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0830	1215	Ø	Section 1
2	0905	1200	Ø	Section 5
3	1015	1100	Ø	Section 12

PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
1960				no fish observed
8/22/72	100			
8/23/76	10,000			
7/31/77	4,000			
8/24/78	12,000			
8/05/79	12,003			uncounted fish present
8/19/80	11,000			
8/07/81	11,000			
8/23/82	8,003			uncounted fish present

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas Area A 1-9 2. Historical Fish PS, SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-73

3. USGS Map No. Ketchikan C-6 4. Legal Location R89E, T73S, S-6

5. Latitude and Longitude 131° 56' 40", 55° 33' 45" 6. Agency Unit 05

7. Aerial Photo No. 0030, 1373, 112, 9-12-73, 02190 8. MGMT Area K29-715

9. Estimated Flow .09 m³/sec 10. Flow Stage 2

11. Land Use. a. present none observed b. Historical logging at mouth

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 13.0

15. pH 6.0 16. Intertidal Zone _____ a. Gradient 3

b. Bottom type 1. fines 10 2. gravel/small cobble 45

3. large cobble/boulders/bedrock 45

c. ASA Poor - 50 m² of possible substrate in very shallow water

d. Schooling only in bay

e. Shellfish potential only a few mussels observed

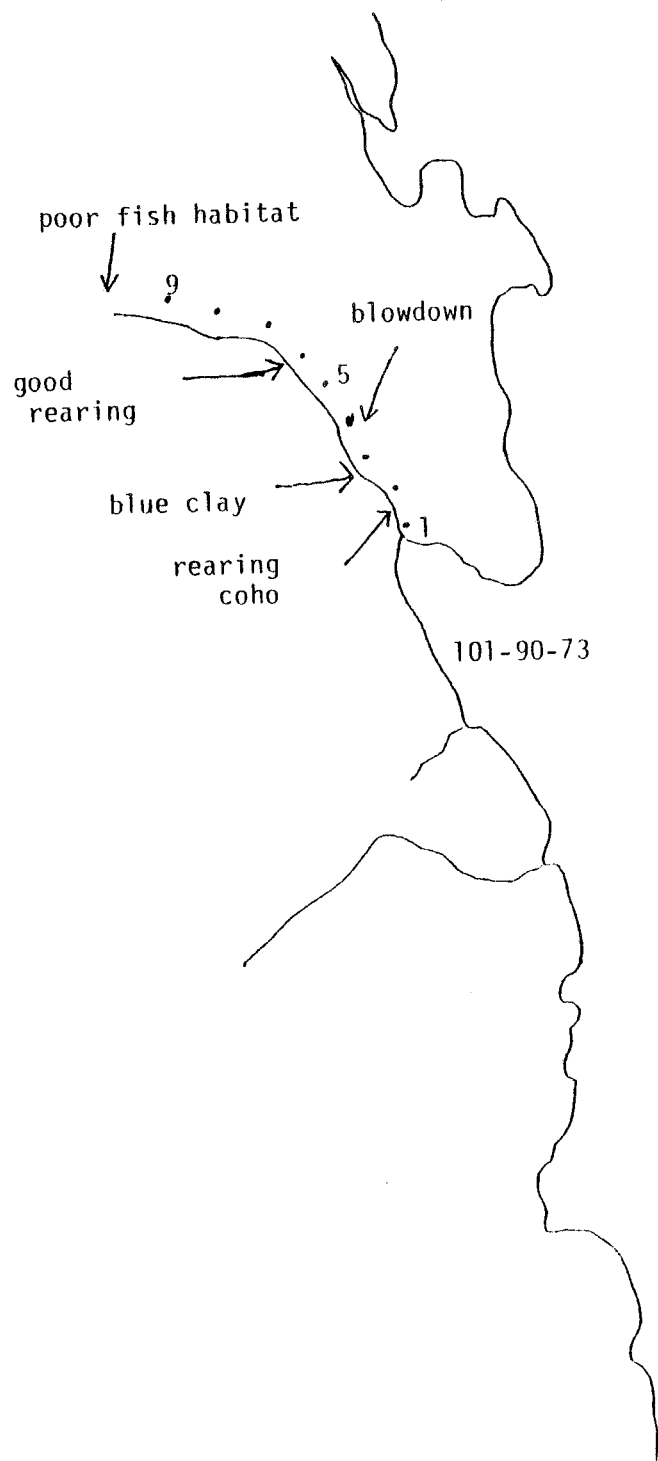
f. Anchorage poor - unprotected

17. Comments

A large log jam in the ITZ could be an impediment to fish passage. However, good numbers of rearing coho were observed in the upper ITZ above the log jam. 101-90-73 contains fair quality ASA in the first couple of Sections. The rearing habitat is adequate also as abundant rearing coho were observed. The fisheries habitat declines until midway through Section 5 when a stretch of excellent rearing habitat becomes available. There is not much ASA however, and the habitat degenerates once more in Section 8. The substrate becomes mossy boulders and the stream becomes quite shallow, providing little ASA or rearing habitat.

18. Investigators Burns/Cariello 19. Weather 3

20. Date 8/21/84 21. Time 1330-1600



BEHM CANAL

101-90-73



1. ITZ



2. Section 1: Good rearing area.

101-90-73



3. Section 4



4. Section 6: Grass growing in midstream.



5. Section 9: End of survey.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	1.5	10	15					
2	100	5.3	10	53					
3	100	2.0	5	10					
4	100	3.0	1	3					
5	100	2.8	5	14					
6	100	3.0	5	15					
7	100	4.1	5	20					
8	100	5.0	1	5					
9	100	3.7	1	4					
Total ASA				139 m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-73

1. Section Number	1	2	3	4	5	6	7	8	9
2. Channel Type									
3. Riparian Vegetation Class	C-5	C-1	C-1	C-5	C-5	C-4	C-4	C-4	C-4.5
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5
5. Lower Bank Composition									
a. bedrock or boulder		10	10	80	10			30	80
b. rubble	10	15	15	20	15			30	20
c. cobble	40	40	60		40	10	10	30	
d. decomposed organic material									
e. gravel	20	35	15		35	60	60	10	
f. sand & silt	30					30	30		
6. Bed substrate composition									
a. bedrock or boulder	20	20	30	45	30	5	10	35	40
b. rubble & cobble	35	30	35	30	25	40	35	30	25
c. coarse gravel	20	20	20	10	25	30	25	20	30
d. fine gravel and sand	25	25	15	15	20	25	30	15	5
e. silt-clay deposits		5							

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-73 Date 8/21/84

1. Reach	1	1	2	2	2	3	3	4	4
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	1.5	3.5	4.5	1.5	.5	.5	2.5	3.8
5. Water Quality	3								
6. Water Width a. channel	9.5	7.0	3.5	3.5	2.8	3.0	4.1	5.0	3.7
b. water	1.5	5.3	2.0	3.0	2.8	3.0	4.1	5.0	3.7
c. special character	-	-	-	-	-	-	-	1	-
7. Water Type % SS	80	15	20	20	70	80	80	50	35
SF	20	85	80	80	30	15	15	50	65
DS						5	5		
DF									
8. Undercut Banks (m) left	10	1	20	1	5	30	30	20	5
right	10	3	1	1	15	30	30	15	6
9. Debris Cover % small	10	1	1	3	3	2	3	1	1
large	25	1	3	5	15	5	8	1	1
10. Riparian Vegetation %	30	5	5	5	5	10	8	3	10
11. Substrate %:									
a. boulders	20	20	30	45	30	5	10	35	40
b. cobble	35	30	35	30	25	40	35	30	25
c. gravel	35	35	30	20	40	50	45	30	30
d. sand	10	10	5	5	5	5	10	5	5
e. organic muck									
f. bedrock									
g. other									
12. ASA	10	10	5	1	5	5	5	1	1
13. Gravel Shape	2	2	2	2	2/3	2/3	2/3	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	50/50	50/50	50/50	100	100
b. type	B	B	B	B	B/C	B/C	B/C	B	B
15. Average Depth (cm)	7	7	10	5	8	15	20	5	8
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1,2	1,2	1,2	1,2	1,2	1,2/4	1,2/4	1,2/4	1/2
b. density	2	2	3	3	3	3/1	3/1	3/1	3/2
19. Sampling	Y	-	-	Y	-	-	-	-	-
20. Rearing Area	90	20	25	20	70	85	85	30	15
21. Comments									

Section 1: Rearing coho are abundant throughout the Section. A heavy debris load contributes to excellent rearing habitat even though there are no deep pools. The gravel was very angular. If the flow was greater, there would be more ASA available.

Section 2: The right upper bank contains a massive blowdown area from S.E. winds. A small trickle enters from the left bank near a 10 m. stretch of blue clay. The left

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2, continued: upper bank has a gradient of 40% while the right bank's is 25%. The rearing habitat decreases in Sections 2 and 3 due to the lack of debris and pool area.

Section 3: Substrate size increases and gradient increases.

Section 4: The Section starts new and a large amount of old blowdown across the stream. The blowdown is vlogged above the active water level however, and does not contribute much to the quality of rearing habitat. The rearing area is limited to a few pools between shallow swift boulder runs and few rearing fish are observed. Aquatic vegetation is very heavy, mostly moss (Fontinalis).

Section 5: Both upper banks flatten out and the stream gradient decreases as an abrupt change in habitat takes place midway through the Section. The stream enters a swampy area where a large patch of blowdown from S.E. winds cross the stream. The rearing habitat increases in quantity and quality and many rearing fish are observed. The substrate contains more rounded gravel and there are fewer boulders present. A small patch of blue clay was observed. The aquatic vegetation is heavy and is predominately algae and moss.

Section 6: Grass is growing in midstream.

Section 7: Several small seeps and a small trickle tributary are present at the end of the Section. Fontinalis is very heavy.

Section 8: Another small trickle enters from the left bank near the start of the Section. The stream becomes very shallow and once again the number of rearing fish observed decreases. The gradient increases and mossy boulders become the dominant substrate material. The upper banks steepen at the end of the Section.

Section 9: Survey discontinued at the end of the Section.

FISH SAMPLING FORM

ADF&G No. 101-90-73 Date 8/21/84 Stream Name _____

Survey Area A H₂O Temp. 13⁰C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1355	1550	SS-70,68,93,55 mm	Section 1
2	1430	1540	CT- 100,85,110,90,75	Section 4

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-6 2. Historical Fish ps,cs,ss

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-74

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,T72S,S-32

5. Latitude and Longitude 55° 35', 131° 57' 30" 6. Agency Unit 05

7. Aerial Photo No. 0030,1373,111,9-12-73,02190 8. MGMT Area K29-715

9. Estimated Flow .08 m³/sec 10. Flow Stage 1

11. Land Use. a. present none observed b. Historical none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 13°C

15. pH 6.5 16. Intertidal Zone _____ a. Gradient 5%

b. Bottom type 1. fines _____ 2. gravel/small cobble _____

3. large cobble/boulders/bedrock 100

c. ASA poor - bedrock comprises most of the substrate

d. Schooling only in saltwater

e. Shellfish potential no shellfish observed

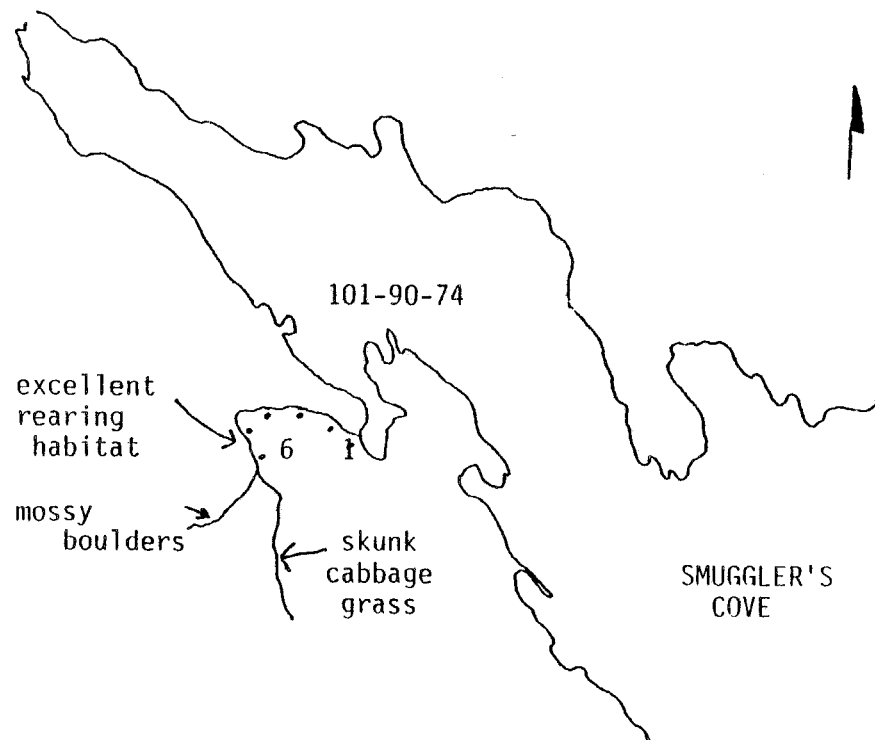
f. Anchorage excellent for skiff

17. Comments

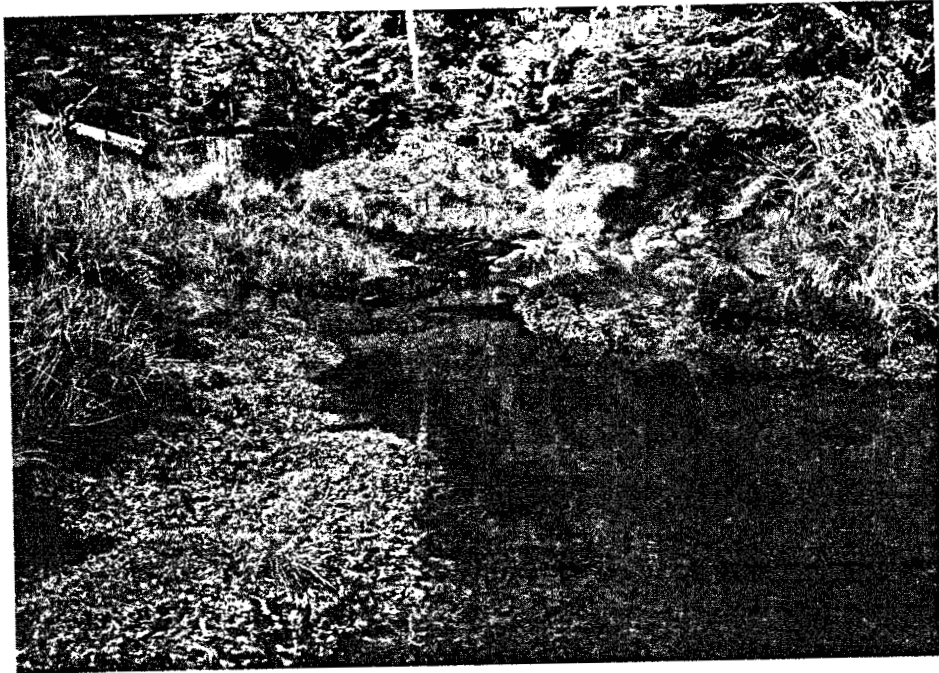
101-90-74 is limited the lack of high quality ASA, and its small size. Suitable substrate for ASA is present in the first 150 m. but the water velocity and depth are not sufficient to provide spawning area. Excellent rearing habitat is present in Sections 2,3,and 5 and many rearing trout were observed. The stream forked in Section 6. The right fork has little fisheries potential due to its steep gradient and mossy boulder substrate. The left fork contains excellent rearing habitat and rearing fish were abundant.

18. Investigators Burns/Cariello 19. Weather 3

20. Date 8/22/84 21. Time 1130-1400



101-90-74



1. ITZ

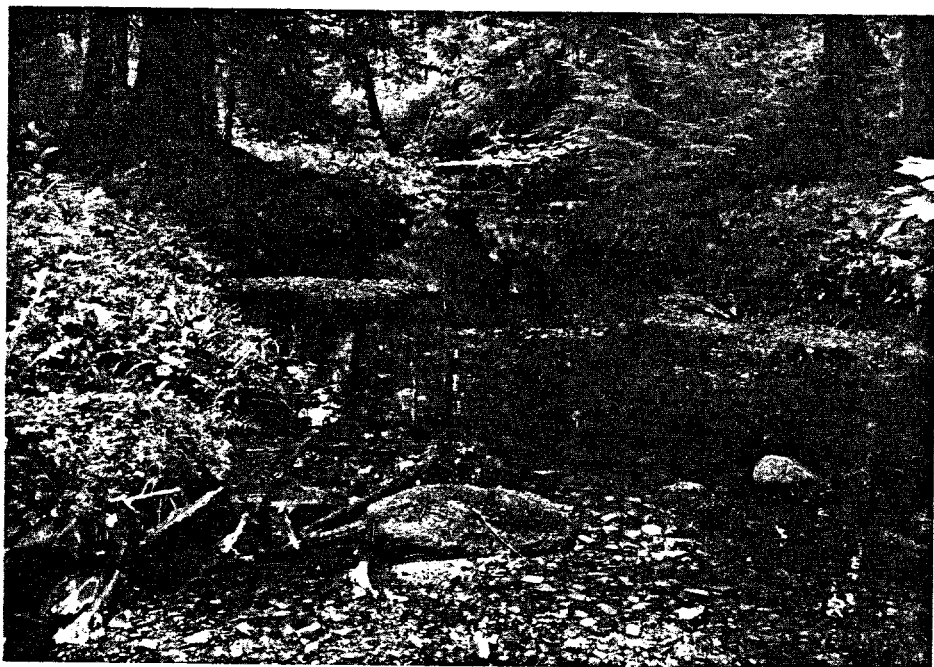


2. Section 1: Midway through the Section.

101-90-74



3. Section 2: Small pool at the end of the Section were several pink salmon were seen.



4. Section 5: Excellent rearing area



5. Section 6: End of survey on the right fork.



6. 150 m. up the left fork: Excellent rearing habitat and possible ASA at higher flows.

101-90-74

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	3.9	15	58.5					
2	100	4.4	10	44					
3	100	3.0	5	15					
4	100	1.5	5	7.5					
5	100	4.0	15	60					
6	100	1.0	5	5					
Total				190m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-74

1. Section Number	1	2	3	4	5	6				
2. Channel Type										
3. Riparian Vegetation Class	C-4	C-4	C-5,4	C-4	C-5,4	C-4				
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5				
5. Lower Bank Composition										
a. bedrock or boulder		10	100	100						
b. rubble		30				10				
c. cobble	30	30				10				
d. decomposed organic mat.										
e. gravel	30	20			30	40				
f. sand & silt	40	10			70	40				
6. Bed substrate composition										
a. bedrock or boulder	15	45	55	35	5	45				
b. rubble & cobble	10	20	20	30	30	30				
c. coarse gravel	35	15	10	10	35	15				
d. fine gravel & sand	40	20	15	10	30	10				
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-74 Date 8/22/84

1. Reach	1	1	1	1	2	3			
2. Section	1	2	3	4	5	6			
3. Section Length (m)	100	100	100	100	100	100			
4. Gradient	1	1.5	2.5	4	.5	5			
5. Water Quality	3	3	3	3	3	3			
6. Water Width a. channel	3.9	4.4	5.5	4.0	5.0	1.0			
b. water	3.9	4.4	3.0	1.5	4.0	1.0			
c. special character	-	-	-	-	1	-			
7. Water Type % SS	99	70	75	30	70	35			
SF	1	30	25	70	30	65			
DS									
DF									
8. Undercut Banks (m) left	5	15	5	2	30	5			
right	25	15	40	0	50	5			
9. Debris Cover % small	1	1	1	1	1	1			
large	1	1	5	5	8	1			
10. Riparian Vegetation %	1	1	15	10	5	10			
11. Substrate %:									
a. boulders	5	10	15	35	5	50			
b. cobble	10	20	20	30	30	30			
c. gravel	55	25	20	15	50	15			
d. sand	20	10	5	5	15	5			
e. organic muck									
f. bedrock	10	35	40	15					
g. other									
12. ASA	15	10	5	5	15	5			
13. Gravel Shape	2	2	2	2	2	2			
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100			
b. type	B	B	B	B	B	B			
15. Average Depth (cm)	5	5	5	10	5	5			
16. Beaver Activity	5	5	5	5	5	5			
17. Potential Barrier	-	-	-	-	-	-			
18. Aquatic Vegetation									
a. type	-	1/3	1/3	1/4	1,3	1			
b. density	-	2/1	3/2	3/1	1	1			
19. Sampling	-	Y	Y	-	Y	-			
20. Rearing Area	99	60	75	30	70	15			
21. Comments									

Section 1: Poor rearing habitat^{is} due to the shallow depth, lack of cover, and overall uniformity of this reach. Substrate size is good, but flow at present is almost all shallow slow, too shallow for pinks to pass at present flow.

Section 2: A small muskeg seep enters from the left bank. Eight adult PS are observed in a pool 60 m. into the Section. The stream gradient increases and the upper banks increase in gradient to 70%. The only usable ASA is in the first 40 m. The last 35 m. above the pool was 100% bedrock.

Section 3: Rearing trout are moderately abundant as the quality of the rearing area

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3, continued: increases. More cover and diversity are present. Two more PS are observed. The left bank's gradient decreases to 25% in this Section.

Section 4: The stream again increases in gradient for most of this Section, but ends in a swamp area. Skunk cabbage and grass is growing in midstream. Moss growth is very heavy.

Section 5: The upper banks flatten out to 20% and the stream gradient decreases to .5%. Excellent rearing habitat is provided by undercut banks, mossy substrate and a light amount of debris. Many rearing trout are observed.

Section 6: The stream forks in half near the start of the Section and the right fork is surveyed. The gradient increases to 10% and the substrate becomes mossy boulders. The survey is discontinued. The right fork continues at a 10-15% gradient for 300 m. with no ASA and very little rearing habitat provided. The stream becomes only .1 m. in width. A reconnaissance of the left fork found much better fisheries habitat. Patches of ASA were found in a 100 m. stretch above a large pool, about 250 m. beyond the fork. The stream enters an area that has a heavy skunk cabbage and grass growth present. The vascular plants nearly block the stream in places and there is a heavy debris load. This habitat type lasts for another 200 m. Many rearing fish were observed.

FISH SAMPLING FORM

ADF&G No. 101-90-74 Date 8/22/84 Stream Name _____

Survey Area A H₂O Temp. 13°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1215	1350	Ø	Section 2
2	1230	1250	Ø	Section 3
3	1255	1335	Ø	Section 5

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-24 C 1-7
B 1-14 D 1-8 E 1-9 2. Historical Fish PS

Part II.

1. Stream Name Smugglers Creek 2. ADF&G Catalog No. 101-90-75
3. USGS Map No. Ketchikan C-6, Craig C-1 4. Legal Location R88E, T72S, S-30
5. Latitude and Longitude 55°35'50", 131°58'30" 6. Agency Unit 05
7. Aerial Photo No. 0029, 1373, 9, 9-12-73, 02190 8. MGMT Area K29-715
9. Estimated Flow 1.7 m³/sec 10. Flow Stage 2 possibly 1
11. Land Use. a. present mining claim b. Historical mining
12. Temperature Sensitivity and/or origin 5, 4, 1
13. Access 2 14. Stream Temperature 16.5°C
15. pH 7 16. Intertidal Zone _____ a. Gradient 2
b. Bottom type 1. fines 10 2. gravel/small cobble 5
3. large cobble/boulders/bedrock 85
c. ASA poor
d. Schooling several pools filled with PS were observed
e. Shellfish potential none observed, crab reported in Smugglers Cove
f. Anchorage good for skiff, an extensive tidal flat is present, however

17. Comments

The middle ITZ is predominately bedrock and boulders. The upper ITZ is mostly bedrock. Although, the water was very dark and it was not possible to get an accurate count, a possible 2,000 PS were schooled up in the ITZ, up to the 40 to 50 m. barrier falls at the head of the ITZ and at the mouth of 101-90-76. 101-90-75 and 101-90-76 share a common upper ITZ, but neither stream appeared to be capable of handling the number of fish in the ITZ, but ASA is limited to the bedrock and boulders of the ITZ.

18. Investigators Burns/Cariello 19. Weather 3
0800-0900
20. Date 8/20/84 8/23/84 9/3/84 21. Time 0700-1600, 0800-1600

BASELINE AQUATIC SURVEY, continued

101-90-75 contained five separate survey areas. All were above the bedrock barrier present in the ITZ.

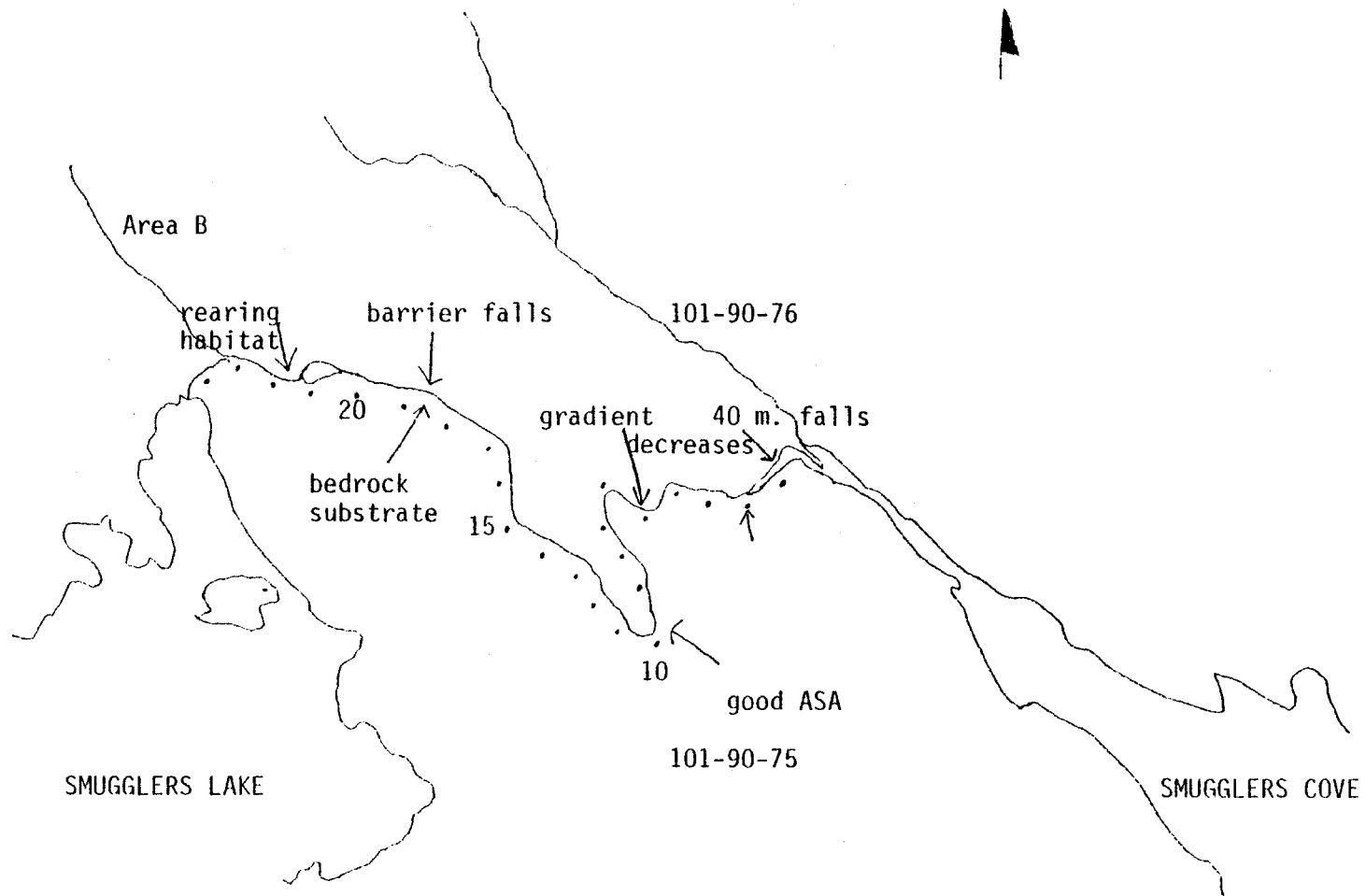
Area A contains several barrier bedrock falls and a man made dam. The survey was started above a 40 m. falls and two more barriers are present within 200 m. The stream is predominately a bedrock channel with little ASA and poor quality rearing habitat for 400 m. The rearing habitat in the second reach, (Sections 5 to 15) is better quality, but still lacks much cover. The second reach also contains stretches of ASA. Sections 16 through 19 are dominated by a bedrock substrate once more. Section 20 through 24, which ends at Smugglers lake, is braided and contains good rearing habitat and a bit of ASA.

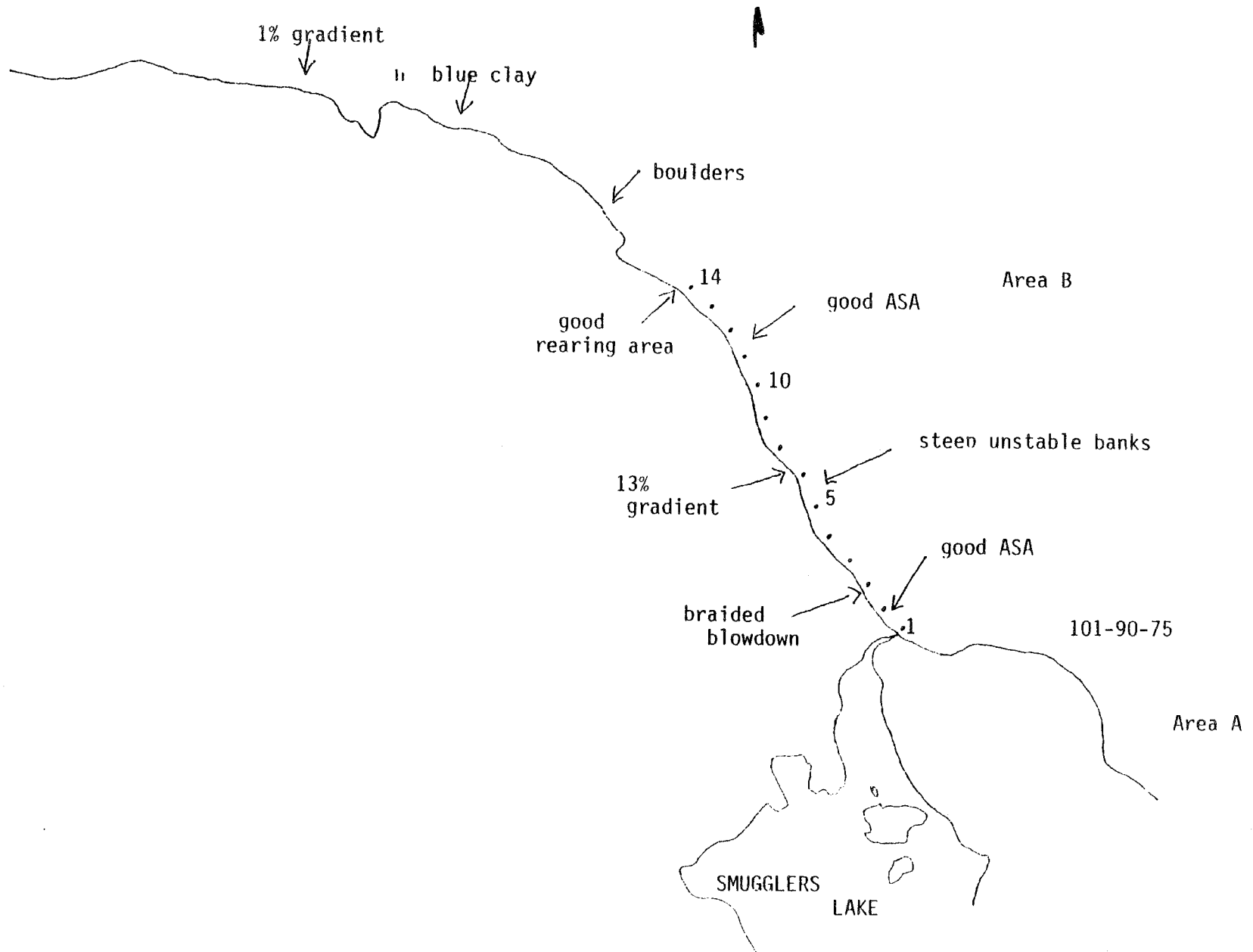
Area B contains good ASA for the first three Sections. This first reach is heavily braided and also contains excellent rearing habitat with a heavy debris load. The stream's habitat steadily decreases as both the gradient and substrate size steadily increase. The channel gets fairly wide and the substrate becomes large boulders. The channel appears to be subject periodic high water discharges. The gradient begins decreasing in Section 9 and by Section 12 the stream habitat has once more changed dramatically. There is good quality rearing available with a massive amount of large debris present. There also is a fair amount of ASA, although the substrate is predominately cobble that is fairly compact and contains sand. This habitat type extends about 300 m. beyond Section 14. The stream then appears to alternate between three different habitat types for almost two miles. Stretches of bedrock and boulders, areas of good gravel and ASA, and slow deep areas with heavy beaver use were observed beyond Section 14 with the use of a helicopter.

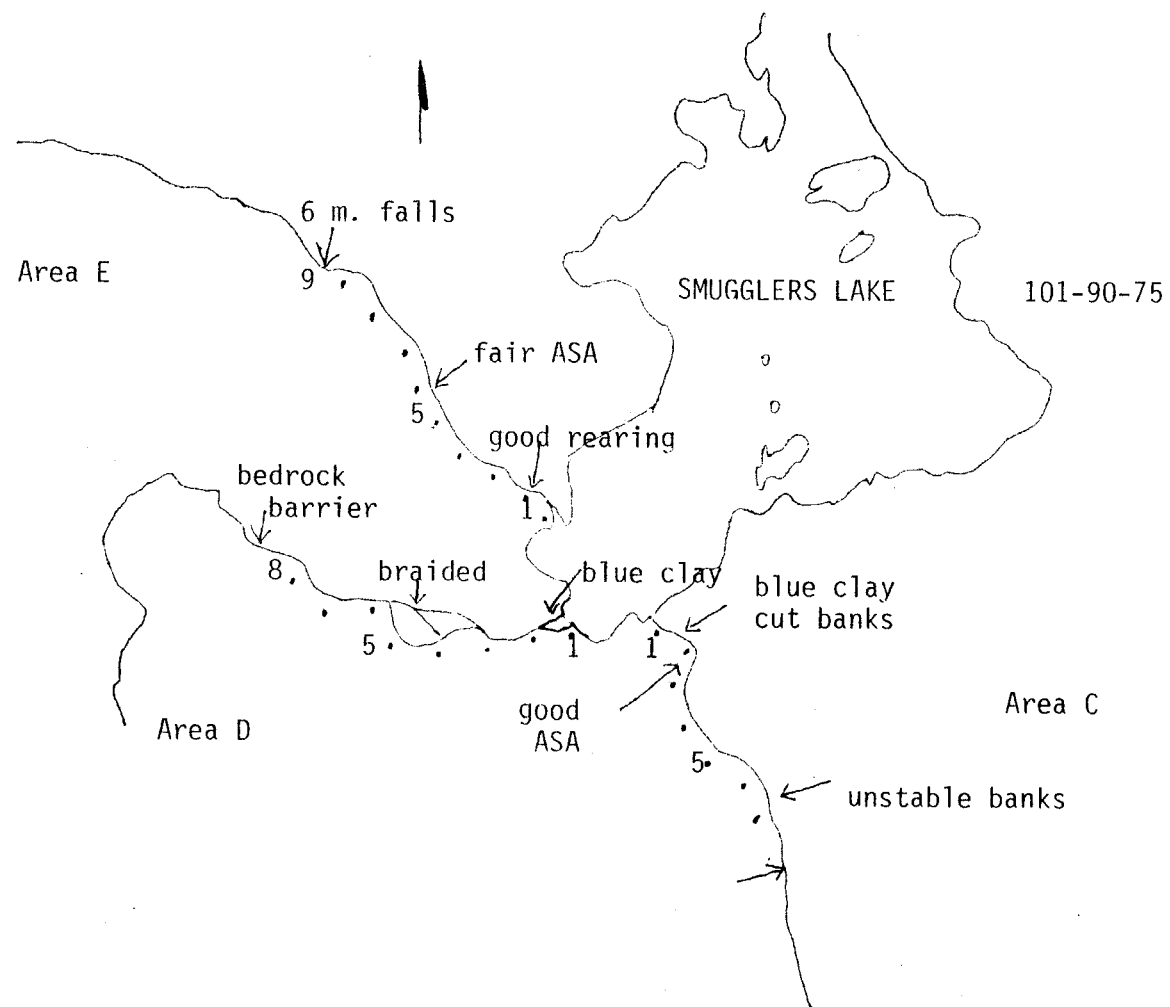
Areas C, D, and E are tributaries to Smugglers Lake. Area C contains good quality ASA and rearing up to a 5 m. barrier falls 700 m. from the lake. Large patches of blue clay were observed in the stream bottom and the substrate is rather flat. However, the gravel contains only trace amounts of fines. Although, the stream is rather swift, the large debris provides ample cover and pool areas for rearing. Good numbers of rearing trout were observed.

Area D is very braided in the lower reach and contains fairly good ASA. Moderate fines were visible when the substrate was disturbed. A 4 m. barrier falls is present 800 m. from the lake. The rearing area is good quality up to Section 6, but relatively few rearing trout were observed.

Area E has a 6 m. barrier falls present 900 m. from the lake. Fair quality ASA is present throughout the survey area. The substrate is flat and contains a moderate amount of fines. A heavy debris load provides good cover and a large amount of pool area for excellent rearing habitat up through Section 6. Few rearing trout were observed, however.



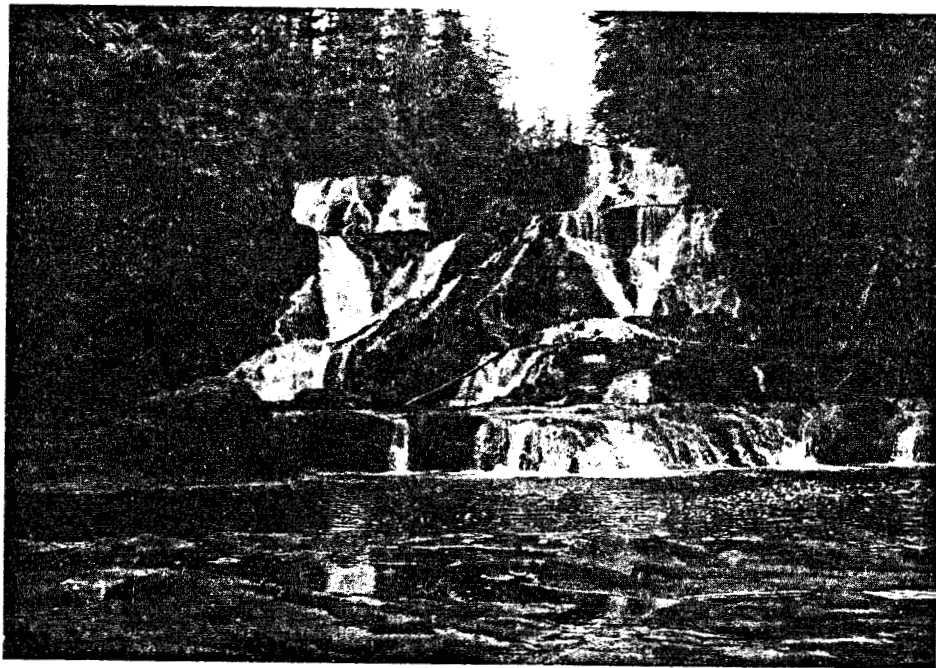




101-90-75 Area A



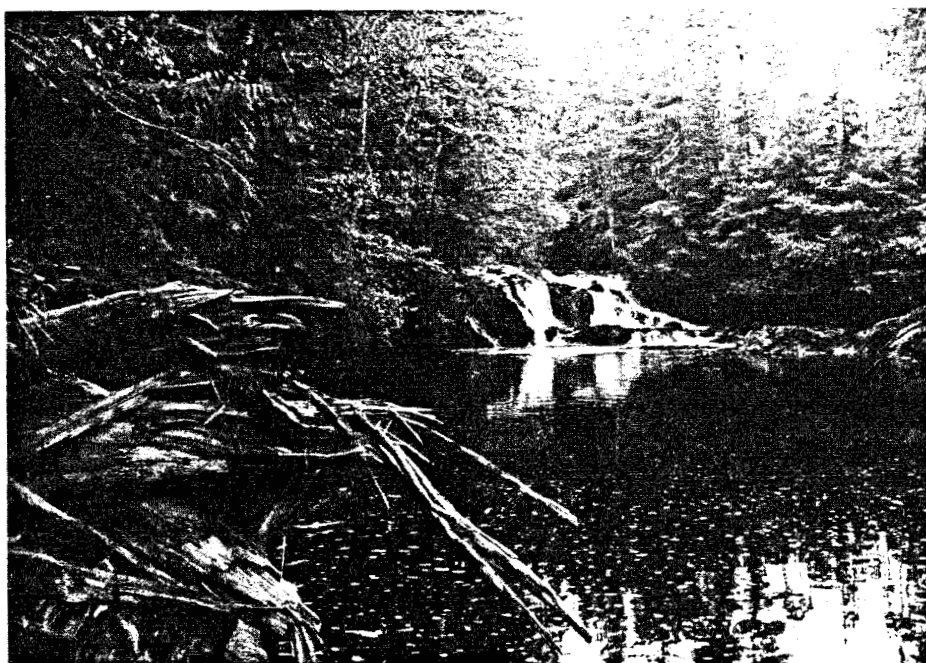
1. Bedrock boulder substrate of middle ITZ.



2. 35 - 40 m. falls at the upper end of the ITZ.



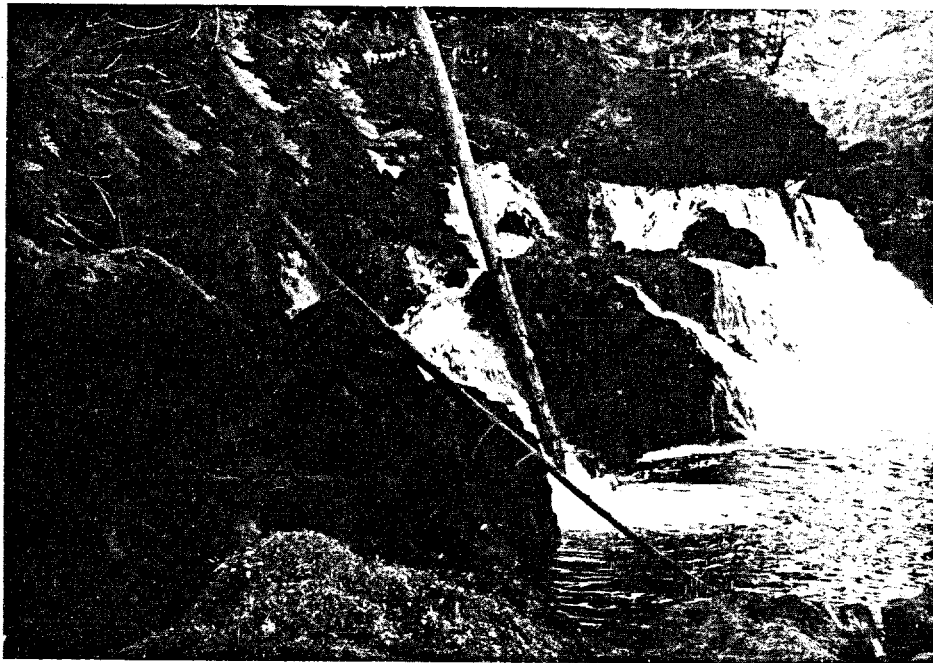
3. Side view of man made dam at the end of Section 1.



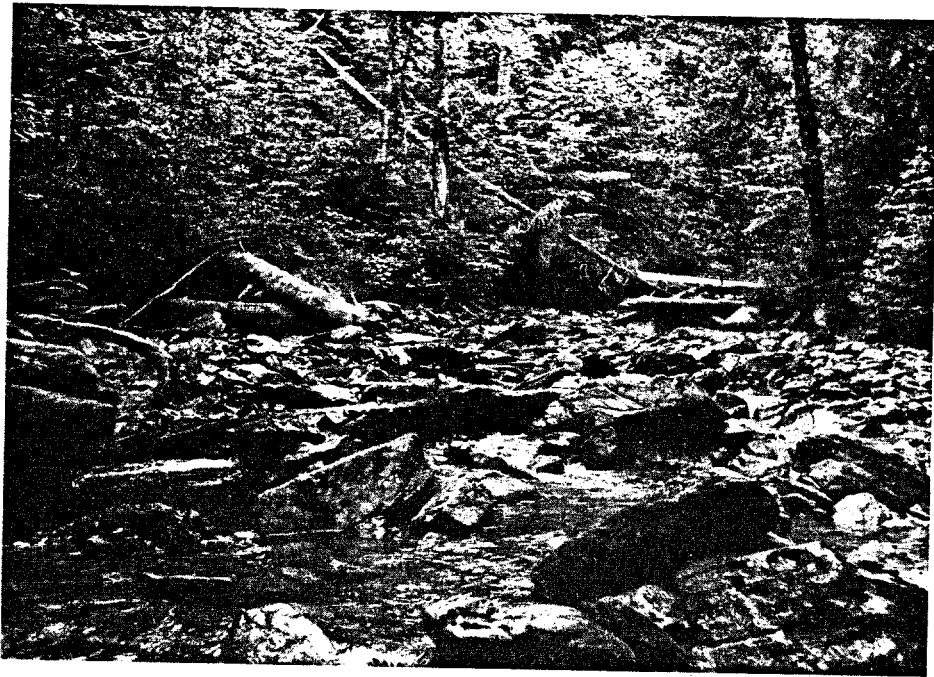
4. 12 m. falls at the end of Section 2.



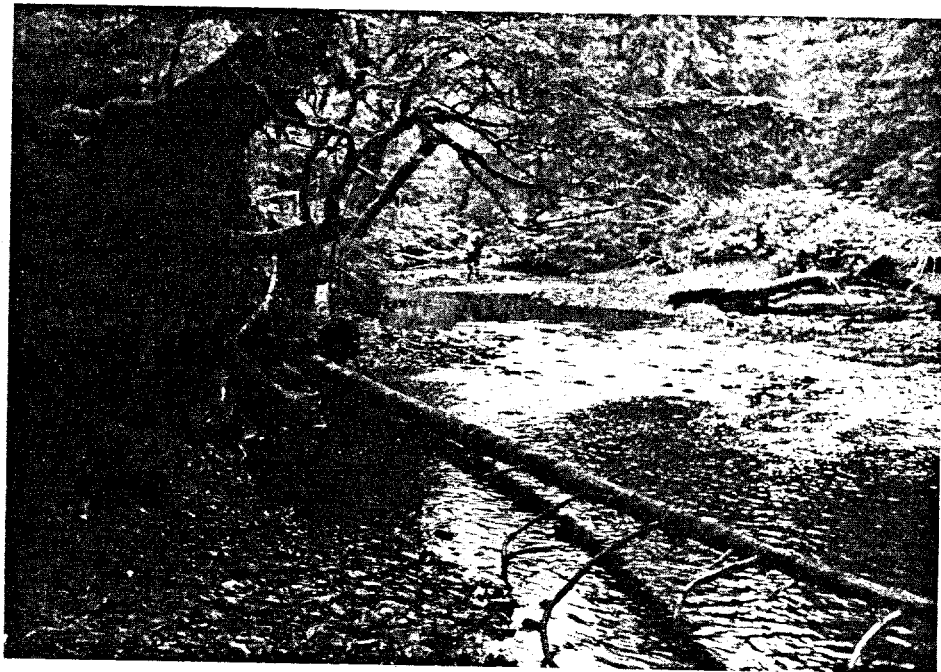
5. Section 6: Rearing habitat and substrate that provides good ASA in Reach 2.



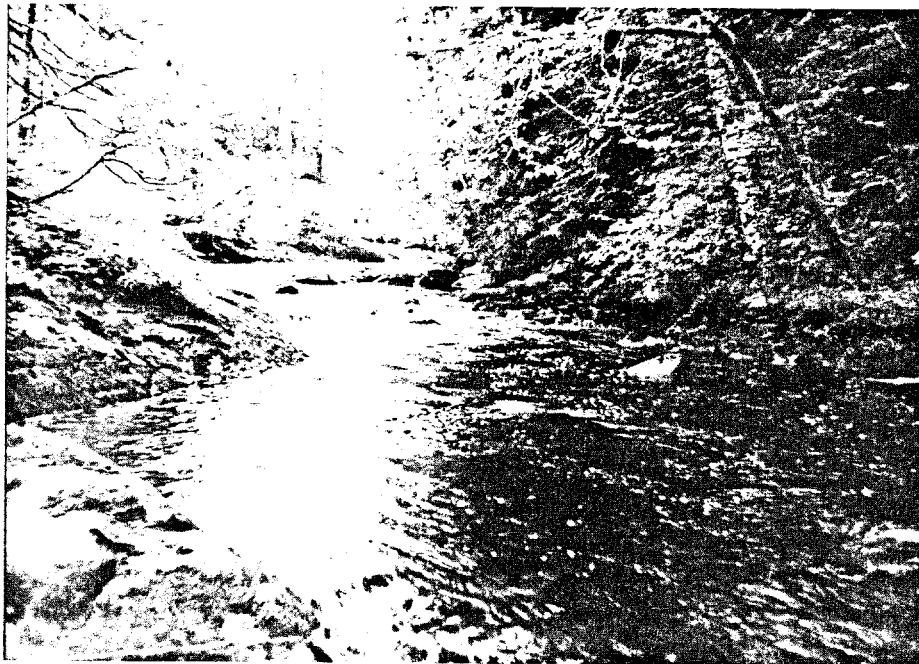
6. Three-tiered barrier falls in Section 18.



.7. Poor habitat in Section 5. Typical of Reach 2.



.8. The gradient decreases and ASA is provided in Section 11.



9. Taken about 300 m. upstream from Section 14.
Substrate consists mostly of boulders.



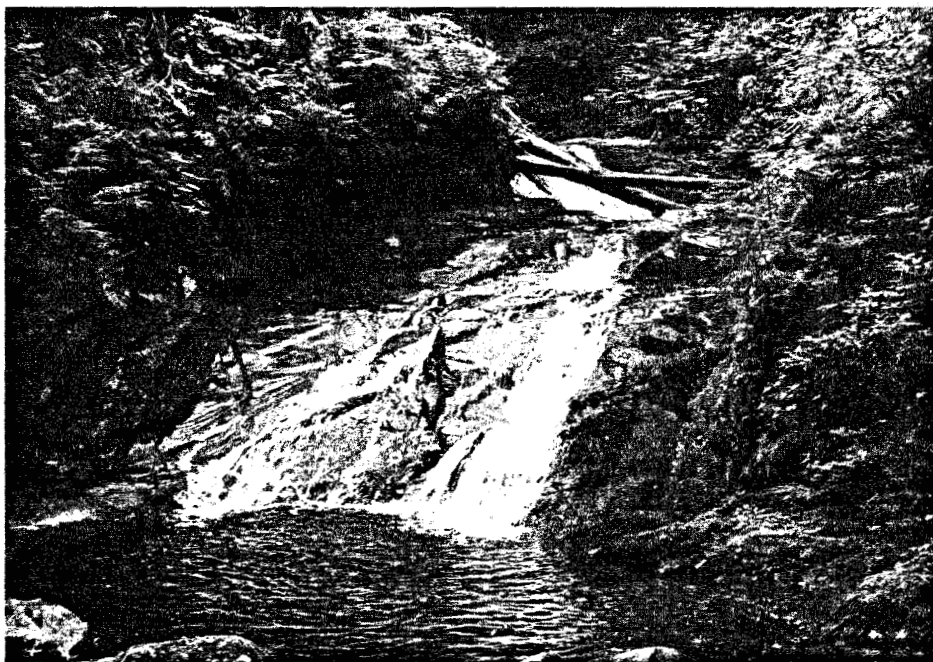
1. Section 1 Good ASA for the first 30 m.
Rearing area is excellent.



2. Section 3 Good shallow riffle area.



3. Section 7 Substrate is mostly boulder and cobble.



4. 5 m. barrier falls 30 m. beyond Section 7.



1. Section 1 Sluggish area with no ASA.



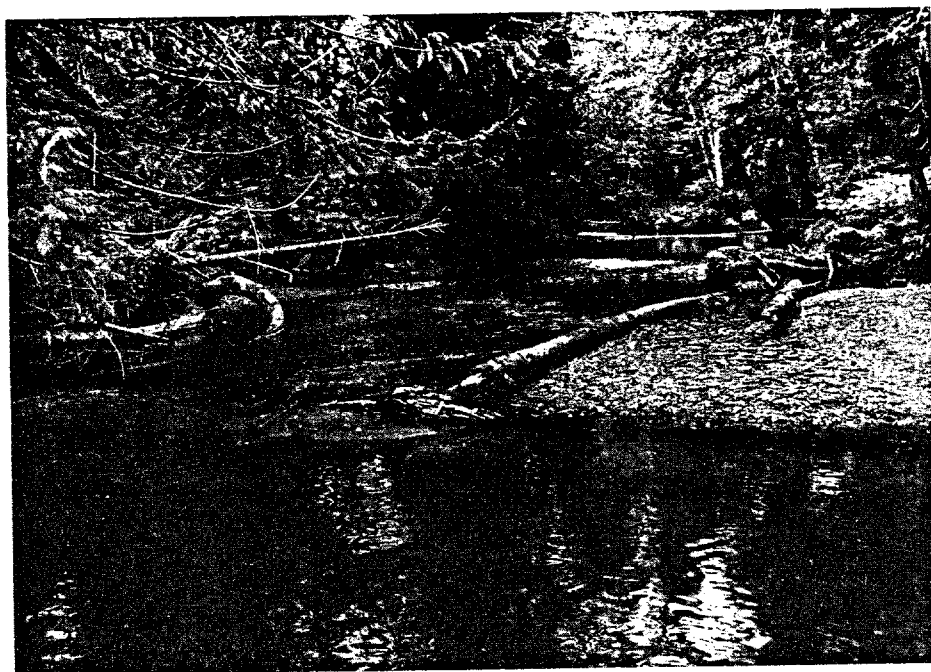
2. Section 4 Good shallow riffle area.



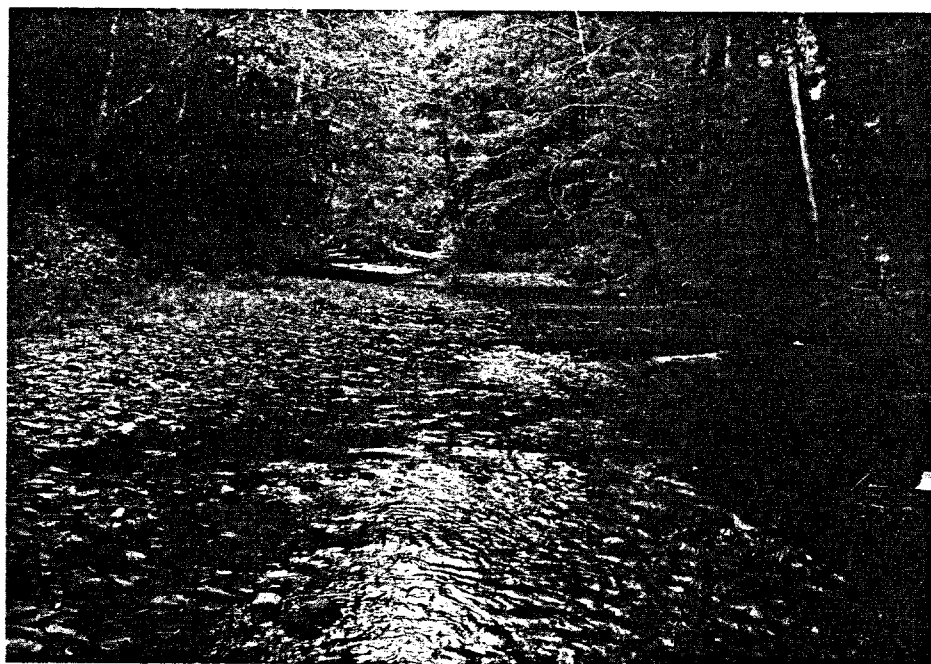
3. Section 7 A 2.5 m. stairstep falls midway through the Section.



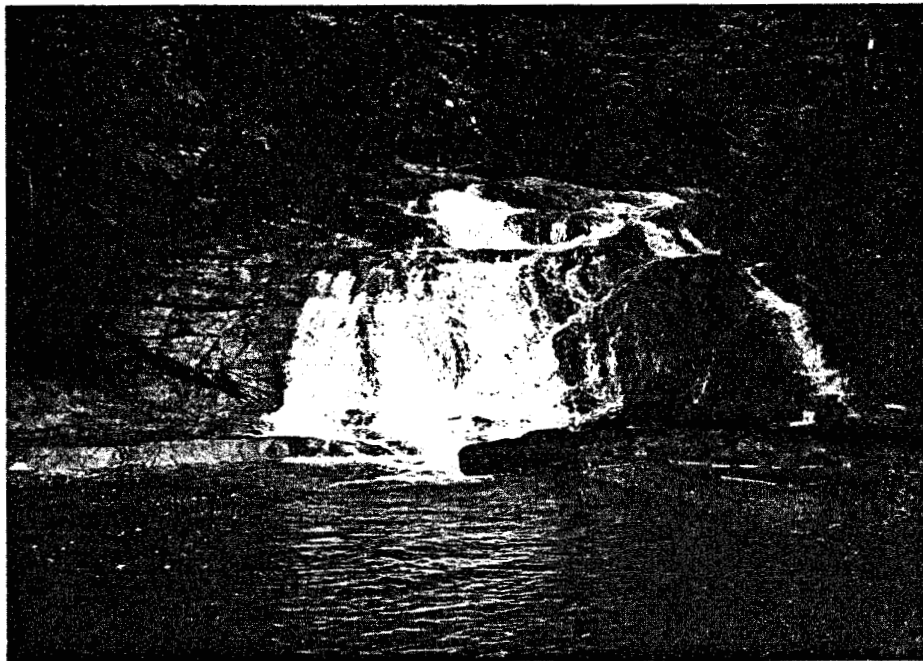
4. Section 8 4 m. barrier falls with a gradient of 55%.



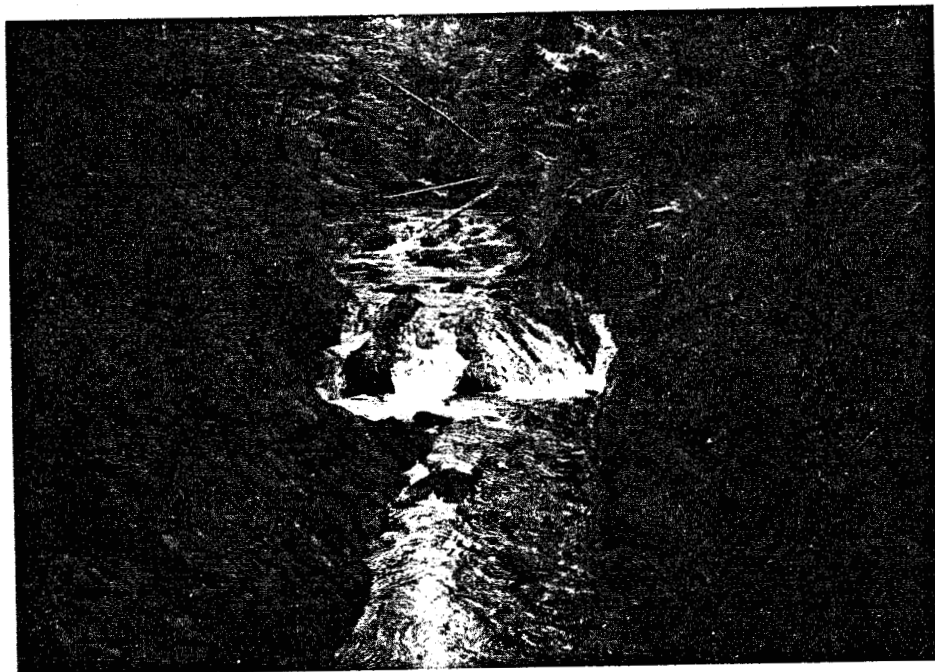
1. Section 2 Typical habitat of the first 400 m.



2. Section 7 Good riffle, but little cover for rearing.



3. Section 9 6 m. barrier falls with a gradient of 60%.



4. Typical habitat 400 m. above the falls. Substrate was 90 bedrock and boulder.

101-90-75

*All areas surveyed were above a barrier falls in the upper ITZ.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	30	1	30					
2	100	20	0	0					
3	100	20	1	20					
4	100	19	1	19					
5	100	23	0	0					
6	100	24	30	720					
7	100	18	30	540					
8	100	20.9	60	1254					
9	100	24	15	360					
10	100	17	70	1190					
11	100	14.5	50	725					
12	100	20	15	300					
13	100	21	10	210					
14	100	16	5	80					
15	100	25	0	0					
16	100	14	0	0					
17	100	22	1	22					
18	100	17.8	0	0					
19	100	15	0	0					
20	100	9.4	1	9.4					
21	100	10.5	5	52.5					
22	100	21	20	420					
23	100	22	5	110					
24	75	16.5	0	0					

Total Area "A" 6,061.9m²

1	100	8.6	45	387
2	100	3.5	20	70
3	100	3.9	10	39
4	100	13	1	13
5	100	3.1	1	13
6	100	6.4	1	6.4
7	100	4.6	0	0
8	100	2.0	0	0
9	100	4.4	5	22
10	100	8.0	2	16
11	100	10.0	30	300
12	100	5.3	20	106
13	100	8.4	10	84
14	100	11.5	30	345

Total Area "B" 1,401.4m²

*All areas surveyed were above a barrier falls in the upper ITZ

101-90-75

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	7.0	35	245					
2	100	2.5	40	100					
3	100	3.0	40	120					
4	100	2.0	35	70					
5	100	2.5	45	112.5					
6	100	3.0	30	90					
7	100	5.5	15	82.5					
Total Area "C"				820m ²					
1	100	16.0	0	0					
2	100	7.5	15	112.5					
3	100	8.0	20	160					
4	100	6.0	40	240					
5	100	5.4	25	135					
6	100	17.0	15	255					
7	100	23.0	0	0					
8	100	8.5	0	0					
Total Area "D"				902.5m ²					
1	100	13	10	130					
2	100	10	25	250					
3	100	7	20	140					
4	100	6	20	120					
5	100	7	35	245					
6	100	9	15	135					
7	100	9	40	360					
8	100	6.3	10	68					
9	100	12	30	360					
Total Area "E"				1,808 m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Smugglers Creek ADF&G No. 101-90-75

1. Section Number	1	2	3	4	5	6	7	8		
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-1/4	C-5	C-5	C-6/5	C-6/5	C-5	C-6		
4. Incision Depth (m)	.5	1	.5	.7	1	.7	.7	.5		
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	100	100					
b. rubble										
c. cobble						30	30	25		
d. decomposed organic mat.										
e. gravel						30	35	35		
f. sand & silt						35	35	40		
6. Bed substrate composition										
a. bedrock or boulder	97	97	96	85	5	5	10			
b. rubble & cobble			1		15	40	40	45		
c. coarse gravel	1	1	1	5	30	30	25	30		
d. fine gravel & sand	2	2	2	10	50	25	25	25		
e. silt-clay deposits										

7. Comments

Section 7: The last 50 m. of the lower left bank was 100% bedrock.

Section 9: Lower left bank is badly undercut towards the end of the Section. Some bedrock along the lower left bank midway through the Section.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Smugglers Creek Area A

ADF&G No. 101-90-75

1. Section Number	9	10	11	12	13	14	15	16		
2. Channel Type										
3. Riparian Vegetation Class	C-5/6	C-6	C-6	C-6	C-5	C-5	C-5	C-1/4		
4. Incision Depth (m)	.5	1	.7	1	1	1	1	1		
5. Lower Bank Composition										
a. bedrock or boulder										
b. rubble										
c. cobble	15	15	10	10	10	10	10	10		
d. decomposed organic mat.										
e. gravel	15	15	10	10	10	10	10	10		
f. sand & silt	70	70	80	80	80	80	80	80		
6. Bed substrate composition										
a. bedrock or boulder	10			10	25	20	40	70		
b. rubble & cobble	40	70	70	55	50	40	30	20		
c. coarse gravel	25	15	10	10	10	5	2	2		
d. fine gravel & sand	25	15	20	25	15	35	13	8		
e. silt-clay deposits										

7. Comments

Section 13: Bedrock on lower left bank the last 20 m.

Section 15: Bedrock along lower banks by the cataracts only.

Section 16: Bedrock is only along the lower banks in the beginning of the Section and again towards the end of the Section.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Smugglers Creek Area A ADF&G No. 101-90-75

1. Section Number	17	18	19	20	21	22	23	24		
2. Channel Type										
3. Riparian Vegetation Class	C-1/5	C-5	C-5	C-1/4	C-5	C-6	C-6	C-6		
4. Incision Depth (m)	.5	.3	.5	1	.7	.7	.7	.7		
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100					25		
b. rubble						10	10	25		
c. cobble				10	5	30	30	25		
d. decomposed organic mat.										
e. gravel				10	10	10	10	10		
f. sand & silt				80	85	50	50	15		
6. Bed substrate composition										
a. bedrock or boulder	90	92	100	30				20		
b. rubble & cobble	1	3		45	20	60	85	75		
c. coarse gravel	1			5	60	20	5			
d. fine gravel & sand	8	5		20	20	20	10	5		
e. silt-clay deposits										

7. Comments

Section 19: Series of barrier falls and bedrock cataracts.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Smugglers Creek Area B ADF&G No. 101-90-75

1. Section Number	1	2	3	4	5	6	7	8		
2. Channel Type										
3. Riparian Vegetation Class	C-6	C-6	C-6	C-6	C-5	C-5	C-5	C-5		
4. Incision Depth (m)	.7	.3	.5	.3	1	1	50	2		
5. Lower Bank Composition										
a. bedrock or boulder			15	35	100	100	100	100		
b. rubble	10	10	25	30						
c. cobble	30	10	20	10						
d. decomposed organic mat.										
e. gravel	10		10	10						
f. sand & silt	50	80	30	15						
6. Bed substrate composition										
a. bedrock or boulder		25	50	80	80	85	100	96		
b. rubble & cobble	75	60	40	20	15	12		1		
c. coarse gravel	10	5	7	T	5	1		1		
d. fine gravel & sand	15	10	3	T	T	2		2		
e. silt-clay deposits										

7. Comments

Section 7: The stream is in a V-notch with banks having a steady gradient of 110% from the top of the lower bank to the top of the ridge making the incision depth 50 m. at least.

Section 2: Extensive clay and sand along the lower banks occasionally mixed with cobble and rubble.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Smugglers Creek Area B ADF&G No. 101-90-75

1. Section Number	9	10	11	12	13	14				
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-4	C-4	C-6	C-6				
4. Incision Depth (m)	1.5	3	.7	.3	.3	3				
5. Lower Bank Composition										
a. bedrock or boulder	100	100	50	25						
b. rubble			15	25	30	25				
c. cobble			20	15	30	30				
d. decomposed organic mat.										
e. gravel			5	10	15	10				
f. sand & silt			10	25	25	35				
6. Bed substrate composition										
a. bedrock or boulder	96	85	10	10	15	20				
b. rubble & cobble	1		60	70	55	55				
c. coarse gravel	1	5	10	5	10	5				
d. fine gravel & sand	2	10	20	15	20	20				
e. silt-clay deposits										

7. Comments

Section 11: First 50 m. was bedrock along lower bank, last 50 m. was cobble and sand.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area C ADF&G No. 101-90-75

1. Section Number	1	2	3	4	5	6	7			
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-1,6	C-1,6	C-4,6	C-5,4			
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5			
5. Lower Bank Composition										
a. bedrock or boulder				10	10	20	60			
b. rubble				30	30	40	30			
c. cobble	10		70	40	40	20	10			
d. decomposed organic mat.										
e. gravel	60	20	20	10	10	10				
f. sand & silt	30	80	10	10	10	10				
6. Bed substrate composition										
a. bedrock or boulder				10	10	20	40			
b. rubble & cobble	35	35	40	34	39	45	30			
c. coarse gravel	25	25	25	25	25	20	10			
d. fine gravel & sand	25	35	30	30	25	15	15			
e. silt-clay deposits	15	5	5	1	1					

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area D ADF&G No. 101-90-75

1. Section Number	1	2	3	4	5	6	7	8		
2. Channel Type										
3. Riparian Vegetation Class	grass	C-5	C-5	C-5	C-5	C-5	C-4	C-4		
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5		
5. Lower Bank Composition										
a. bedrock or boulder						20	100	100		
b. rubble	20					30				
c. cobble	30		40	40	40	20				
d. decomposed organic mat.										
e. gravel	30		40	40	40	20				
f. sand & silt	20	100	20	20	20	10				
6. Bed substrate composition										
a. bedrock or boulder						5	80	80		
b. rubble & cobble	30	30	25	25	25	25	5	5		
c. coarse gravel	20	25	30	30	35	30	5	5		
d. fine gravel & sand	40	45	45	45	40	40	10	10		
e. silt-clay deposits	10									

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area E ADF&G No. 101-90-75

1. Section Number	1	2	3	4	5	6	7	8	9	
2. Channel Type										
3. Riparian Vegetation Class	C-6	C-5	C-5	C-5 D-2	C-4 D-2	C-4.5	C-4.5	C-5.4	C-5	
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5	
5. Lower Bank Composition										
a. bedrock or boulder			10			40				
b. rubble			30			30		10	10	
c. cobble			30		10	20	30	70		
d. decomposed organic mat.										
e. gravel		20	70		30	10	30	20		
f. sand & silt	100	80	10	100	60		40			
6. Bed substrate composition										
a. bedrock or boulder				5	15	35	10	35	35	
b. rubble & cobble	30	40	40	40	40	20	30	30	30	
c. coarse gravel	35	30	30	25	35	15	30	30	30	
d. fine gravel & sand	30	30	30	30	10	30	30	5	5	
e. silt-clay deposits	5									

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Smugglers Creek ADF&G No. 101-90-75 Date 8/23/84

1. Reach	1	1	1	1	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3.5	2.0	2.5	2.0	.5	1.0	1.0	2.0	1.5
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. channel	30	20	20	22	23	30	23	21.5	24
b. water	30	20	20	19	23	24	18	20.9	24
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	50	10	10	30	10	25	50	40	20
SF	30	25	20	50				40	
DS	15	65	70	20	90	75	50	20	80
DF	5								
8. Undercut Banks (m) left	0	10	20	20	10	0	0	0	30
right	0	0	0	10	20	90	60	15	30
9. Debris Cover % small	0	0	0	0	1	0	0	2	1
large	1	0	0	0	1	0	1	3	5
10. Riparian Vegetation %	5	5	5	5	5	5	5	5	5
11. Substrate %:									
a. boulders	5	47	1			5	10		5
b. cobble			1		15	40	39	45	40
c. gravel	2	2	2	10	60	45	40	45	40
d. sand	1	1	1	5	20	10	10	10	10
e. organic muck									
f. bedrock	92	50	95	85	5		1		5
g. other									
12. ASA	T	0	1	T	0	30	30	60	15
13. Gravel Shape	2	2	3	3	1	1-3	1-3	1-3	1
14. Streambank Vegetation									
a. percentage	100	50/50	50/50	100	100	100	100	50/50	50/50
b. type	B	B/C	B/C	B	B	B	B	A/B	A/B
15. Average Depth (cm)	35	60	60	22	50	75	35	30	65
16. Beaver Activity	5	6	6	6	6	6	6	6	6
17. Potential Barrier	5	2	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1	1	1	1	3	3	3	-	3
b. density	1	1	1	1	3	2	2		3
19. Sampling	-	-	-	-	-	-	-	Y	-
20. Rearing Area	50	70	70	50	100	100	100	60	100
21. Comments									

Section 1: The survey is started 15 m. above a 40 m. barrier falls at the head of the ITZ. The substrate is bedrock with little rearing or ASA. Ninety m. into the Section is a man made log dam that is a barrier to adult salmon passage. A large deep pool is formed above the dam. An old 36" waterline runs along the right upper bank. The rearing area is poor quality except for the deep pool areas due to the almost total lack of cover. With any increase in flow the shallow slow areas would become shallow fast

Section 2: Above the large pool that started in Section 1 is a 12 m. barrier bedrock

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2, continued: falls. A large trout was observed feeding. The gradient does not include the falls which had a gradient of 55% for 20 m. Muskeg on upper right bank.

Section 3: A trace of very compact ASA is all that is available between the bedrock. Muskeg is on the upper left bank. Both upper banks are flat. One trout was observed rising in a deep pool.

Section 5: The stream gradient decreases and becomes deep and has little velocity. The substrate changes to gravel and cobble. The rearing habitat improves although there still is little cover.

Section 6: The substrate is suitable for ASA, but the water velocity is too slow to provide good quality spawning area. The gravel contains a moderate amount of sand, but only a trace amount of silt.

Section 7: The last 50 m. of the lower left bank was 100% bedrock.

Section 8: The stream velocity increases enough to provide riffle areas with ASA. The right bank begins as a flood plain.

Section 9: The stream again slows down and its depth increases. The left bank is badly undercut towards the end of the Section. Some bedrock is present along the lower left bank midway through the Section.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Area A
Stream Name Smugglers Creek ADF&G No. 101-90-75 Date 8/23/84

1. Reach	2	2	2	2	2	2	3	3	3
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2.5	2.0	1.5	1.5	1.5	2.0	2.5	2.0	2.5
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. channel	23	20	20	21	16	55	17	22	22.6
b. water	17	14.5	20	21	16	25	14	22	17.8
c. special character	-	-	-	-	-	-	-	1	-
7. Water Type % SS	65	30	85	60	30	15	50	60	15
SF	30	45	5	10		15	30	30	35
DS	5	25	10	30	70	70	20	10	40
DF									10
8. Undercut Banks (m) left	70	30	40	30	10	20	0	0	0
right	0	30	60	30	0	40	20	0	0
9. Debris Cover % small	0	0	0	0	0	0	0	0	0
large	0	1	0	0	1	1	0	1	0
10. Riparian Vegetation %	5	5	5	5	5	5	5	5	5
11. Substrate %:									
a. boulders			10	25	20	40	20		2
b. cobble	70	70	55	50	40	30	20	1	3
c. gravel	25	20	20	10	10	5	4	3	3
d. sand	5	10	15	15	30	10	6	6	2
e. organic muck									
f. bedrock						15	50	90	90
g. other									
12. ASA	70	50	15	10	5	0	0	1	0
13. Gravel Shape	1	1	1,2	1,2	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	A	A	B	B	B	B	B	B	B
15. Average Depth (cm)	60	30	60	20	30	120	35	13	40
16. Beaver Activity	6	6	6	6	6	6	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	2
18. Aquatic Vegetation									
a. type	3	3	3	3	3	1,3	1	1/2	1/2
b. density	2	2	1	2	2	2	2	1/3	1/3
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	100	55	95	90	100	85	70	70	55
21. Comments									

Section 10: The substrate is now predominately cobble and provides good ASA. There is a moderate periphyton growth on the gravel in places, however. Rearing area is still abundant, but lacks any cover.

Section 11: The percentage of sand is increasing. The substrate is more compact also with a hard layer of sand and silt beneath a thin cobble layer.

Section 12: The substrate size is increasing and the quality of the ASA is decreasing. The cut banks are not very deep.

Section 13: Bedrock on lower left bank last 20 m.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 14: The Section ends in a large deep pool.

Section 15: The next reach contains poorer rearing habitat and ASA as the substrate is dominated by the presence of bedrock. A 1 m. stairstep falls is present in a stretch of bedrock cataracts near the start of the Section. The gradient was taken above the cataracts.

Section 16: A substrate of compact boulders and large cobble is found between stretches of bedrock.

Section 17: A small bedrock island splits the stream into channels for 30 m.

Section 18: Fifty meters into the Section is a three tiered barrier bedrock falls. There are three 2.5 to 3 m. barrier falls back to back.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Smugglers Creek ADF&G No. 101-90-75 Date 8/23/84
Area A

1. Reach	3	4	4	4	4	4			
2. Section	19	20	21	22	23	24			
3. Section Length (m)	100	100	100	100	100	75			
4. Gradient	15	2.0							
5. Water Quality	4	4	4	4	4	4			
6. Water Width									
a. channel	21	10	14	27.5	40	20			
b. water	15	9.4	10.5	21	22	16.5			
c. special character	-	-	1	1	1	-			
7. Water Type %									
SS	25	50	20	30	30	50			
SF	25	5	20	35	20	50			
DS	25	45	60	35	50				
DF	25								
8. Undercut Banks (m)									
left	0	0	10	0	0	10			
right	0	30	10	0	20	0			
9. Debris Cover %									
small	0	0	5	1	0	0			
large	0	1	10	1	3	0			
10. Riparian Vegetation %	5	5	5	5	10	0			
11. Substrate %:									
a. boulders		20				20			
b. cobble		45	20	60	85	75			
c. gravel		10	70	30	10				
d. sand		15	10	10	5	5			
e. organic muck									
f. bedrock	100	10							
g. other									
12. ASA	0	1	5	20	5	0			
13. Gravel Shape	-	2	1	2	2,3	2,3			
14. Streambank Vegetation									
a. percentage	100	100	100	A	A	A			
b. type	B	B	B	100	100	100			
15. Average Depth (cm)	17	50	30	40	30	10			
16. Beaver Activity	5	5	5	6	6	6			
17. Potential Barrier	2	-	-	-	-	-			
18. Aquatic Vegetation									
a. type	1/2	1-3	2/4	2/4	2/3	2/4			
b. density	1/3	2	2/3	2/3	1/2	1/3			
19. Sampling	-	-	Y	-	-	-			
20. Rearing Area	50	95	80	60	90	50			
21. Comments									

Section 19: A 60 m. long stretch of bedrock in this Section contains a 10 m. high velocity chute and several 1 to 2 m. falls that could impede upstream fish passage.
 Section 20: The streams gradient flattens out again in this reach and braiding begins. The presence of bedrock diminishes, but the substrate is compact and is covered by a heavy moss, algae, and periphyton growth. A flood channel to the left provides excellent rearing area. The flood channel begins midway through the Section and continues for 100 m. All rearing area is deep slow.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 21: The channel to the left ends near the end of this Section. The stream continues to braid in this Section. Good rearing in this Section. The side channel along the left bank had excellent cover. Where the side channel rejoins there is a lot of debris.

Section 22: The stream braids into two 11 m. wide channels. A good stretch of ASA is present in the right channel. Muskeg on upper left bank.

Section 23: The substrate again becomes very compact and is covered with a heavy filamentous algae growth. A $.6 \text{ m}^3/\text{sec}$ tributary enters near the end at the Section from the right bank. The tributary is surveyed as Area E.

Section 24: Area A ends in Smugglers Lake 75 m. into the Section.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B ADF&G No. 101-90-75 Date 3/23/84

1. Reach	1	1	1	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	4	6	5	6	6	10	13	5
5. Water Quality	1	1	1	1	1	1	1	1	1
6. Water Width a. channel	8.6	3.5	8	20.4	12.9	12	9	8.6	6.2
b. water	8.6	3.5	3.9	13	3.1	6.4	4.6	2	4.4
c. special character	1	1	1	1	-	-	-	-	-
7. Water Type % SS	35	40	40	20	15	10	10	10	10
SF	35	45	45	70	70	70	70	70	70
DS	30	15	15	10	15	10	10	10	10
DF						10	10	10	10
8. Undercut Banks (m) left	60	40	40	0	0	0	0	0	0
right	60	40	40	0	0	0	0	0	0
9. Debris Cover % small	2	10	10	1	1	5	0	0	0
large	8	15	20	3	15	20	10	10	10
10. Riparian Vegetation %	15	20	20	5	5	6	0	0	0
11. Substrate %:									
a. boulders		25	50	78	79	84	20	96	46
b. cobble	75	60	40	20	15	12		1	1
c. gravel	15	10	9	1	5	1		1	1
d. sand	10	5	1	1	1	2		2	2
e. organic muck									
f. bedrock						1	80		50
g. other									
12. ASA	45	20	10	1	1	1	0	0	5
13. Gravel Shape	1,2	1,2	2,3	2	2	-	-	2	2
14. Streambank Vegetation									
a. percentage	A	A	A	B	B	B	B	B	B
b. type	100	100	100	100	100	100	100	100	100
15. Average Depth (cm)	50	15	30	20	25	30	30	25	30
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	-	-	-	-	-	-	1,2,3	1,2,3	1,2,3
b. density	-	-	-	-	-	-	2	2	2
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	65	65	65	30	30	20	10	10	10
21. Comments									

Section 1: The substrate and water characteristics are conducive to providing excellent ASA. Only a light amount of fines are present. There is a 2 m. wide channel to the left that provides good rearing and ASA also. The stream is in a braided floodplain with muskeg present on the upper right bank. Severely undercut banks with exposed roots are present. Many large alder are growing in the stream channel. The last 30 m. had undercut banks composed mostly of clay and sand. Good cover for rearing is present.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2: The substrate increases gradually in size and a few small boulders are present. Large spruce blowdown from S.E. winds are present in Sections 2 and 3. Heavy braiding in this extensive flood plain continues and makes surveying difficult. A large debris and log jam are present 75 m. into the Section. The heavy debris load provides good rearing habitat. The water temperature was 13⁰ and the pH 7. The flow was estimated at .6 m³/sec.

Section 3: The gradient and substrate size begins increasing and the amount of ASA decreases. The banks appear to be cut often by high flows. Clay observed occasionally along the lower banks.

Section 4: The braiding ends in this Section and the next reach begins. Not much blowdown or debris is present. The gradient increases and large boulders become the dominant substrate. A wide channel is present indicating periodic high discharges.

Section 5: The upper banks steepen. The lower banks are almost entirely composed of bedrock and boulder.

Section 6: The upper left bank is unstable and there are several slides present.

Section 7: Very large boulders and patches of bedrock are present. The stream is just about completely white water.

Section 9: the gradient decreases and a rearing trout is observed. A patch of gravel has collected above a .5 m. debris dam.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B ADF&G No. 101-90-75 Date 8/23/84

1. Reach	2	2	3	3	3				
2. Section	10	11	12	13	14				
3. Section Length (m)	100	100	100	100	100				
4. Gradient	10	6.5	3	4.0	4.0				
5. Water Quality	1	1	1	1	1				
6. Water Width a. channel	12	10	16	8.4	12.5				
b. water	8	10	5.3	8.4	11.5				
c. special character									
7. Water Type % SS	10	25	25	40	40				
SF	70	45	45	50	40				
DS	10	30	30	10	20				
DF	10								
8. Undercut Banks (m) left	0	5	20	0	20				
right	0	5	20	0	20				
9. Debris Cover % small	10	0	2	2	5				
large	10	1	8	8	15				
10. Riparian Vegetation %	0	5	10	10	10				
11. Substrate %:									
a. boulders			10	15	20				
b. cobble		60	70	55	55				
c. gravel	10	20	10	20	15				
d. sand	5	10	10	10	10				
e. organic muck									
f. bedrock	85	10							
g. other									
12. ASA	2	30	20	10	30				
13. Gravel Shape	1	2	2	2	2				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100				
b. type	B	B	B	A	A				
15. Average Depth (cm)	30	50	50	45	40				
16. Beaver Activity	5	5	5	6	6				
17. Potential Barrier	-	-	-	-	-				
18. Aquatic Vegetation									
a. type	1	-	1	1,3	1,3				
b. density	3	-	3	3	3				
19. Sampling	-	-	-	-	-				
20. Rearing Area	10	50	50	50	60				
21. Comments									

Section 10: Patches of gravel are over the bedrock and could provide a small amount of poor ASA.

Section 11: Good ASA and fair rearing habitat is available. The substrate is fairly compact cobble with a layer of sand underneath, however.

Section 12: The ASA decreases in quality as more sand and fine gravel is present in the substrate.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 14: A small tributary enters from the steep right bank. Good patches of ASA are found, but the predominate substrate is small boulders and large cobble. The survey is discontinued at the end of Section 14. A reconnaissance beyond this point found about 30% ASA for about the next 300 m. The average width is 7 m., but the average depth is only 15 cm, however. There is good rearing habitat provided also, due to the cover provided by heavy debris load. The stream then entered a bedrock/boulder stretch 50 m. beyond a large log jam and gravel bar. A helicopter reconnaissance on 9/30 found that the bedrock and boulder stretch was about 400 m. long. The gradient was 4% and there was little ASA or rearing habitat provided in this stretch. The stream gradient then decreased to 1% and the substrate changed to clean gravel and cobble that provided good ASA. Extensive patches of blue clay were observed on the stream bottom, however and dense algae was present in the deeper areas of the stream. The stream was in a high water stage and the water temperature was 10.5°C. Areas where large debris had dammed up provided good rearing habitat, but there was little cover provided except for the undercut banks. The stream then got deep and active beaver sign was observed on the banks. By helicopter, the stream appeared to alternate between stretches of boulders, slow deep areas, and stretches of ASA for another 1 1/2 miles.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area C ADF&G No. 101-90-75 Date 8/20/84

1. Reach	1	1	2	2	2	2	3	3
2. Section	1	2	3	4	5	6	7	8
3. Section Length (m)	100	100	100	100	100	100	100	100
4. Gradient	.5	1	3	3	3	3	4	
5. Water Quality	1							
6. Water Width a. channel	7.0	7.0	3.0	4.0	3.0	12.0	6.5	6.6
b. water	7.0	2.5	3.0	2.0	2.5	3.0	5.5	4.6
c. special character	-	-	-	-	-	1	-	-
7. Water Type % SS	40	20	20	25	20	22	15	
SF	50	60	70	65	70	70	80	
DS	10	20	10	10	10	8	5	
DF								
8. Undercut Banks (m) left	30	50	30	25	10	10	0	
right	40	50	30	25	10	10	0	
9. Debris Cover % small	5	3	2	5	10	5	3	
large	10	10	15	20	20	15	20	
10. Riparian Vegetation %	5	5	15	10	5	2	1	
11. Substrate %:								
a. boulders				10	10	20	40	
b. cobble	35	35	40	34	39	45	30	
c. gravel	40	45	45	45	40	30	20	
d. sand	10	15	10	10	10	5	5	
e. organic muck								
f. bedrock								
g. other blue clay	15	5	5	1	1			
12. ASA	35	40	40	35	45	30	15	
13. Gravel Shape	1	1	1	1	1	1	1	
14. Streambank Vegetation								
a. percentage	100	100	80/20	50/50	50/50	50/50	100	
b. type	A	A	A/B	A/B	A/B	A/B	B	
15. Average Depth (cm)	25	20	20	5	10	7	10	
16. Beaver Activity	5	5	5	5	5	5	5	
17. Potential Barrier	-	-	-	-	-	-	-	
18. Aquatic Vegetation								
a. type	0	0	0	0	0	0	102	
b. density	0	0	0	0	0	0	7	
19. Sampling	Y	-	-	-	Y	-	-	
20. Rearing Area	50	40	30	30	25	25	15	
21. Comments								

Section 1: A nice mixture of riffles and pools with large debris provides excellent rearing habitat. Rearing trout are abundant. The banks show evidence of being recently cut away. Large patches of brown clay are observed both in the stream bottom and cut banks. The flat gravel substrate contains a moderate amount of sand, but only a trace amount of silt and appears to be excellent spawning substrate.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2: The substrate lacks any aquatic vegetation growth. The temperature and pH were 11°C and 7.5 respectively. The flow was estimated at .2 m³/sec.

Section 3: A photo was taken here of good riffle area characteristic of the first several Sections. A thin layer of silt covers the substrate in slow moving portions of the stream along the banks. A little more large cobble is present. The gradient increases and the substrate gets larger. The left upper bank attains a gradient of 45% near the end of the Section. The right bank is a flood plain with flood channels present.

Section 4: There is blowdown from S.W. winds on the left upper bank. The substrate size increases and boulders begin to appear. The incidence of clay decreases and only patches were observed.

Section 5: First 30 m. is good ASA - nice riffle area.

Section 6: A .6 m. debris falls are found near recent blowdown from southerly winds. The right upper banks gradient increases to 75% while there is a 30 m. wide flood plain on the left bank. A dry braided flood channel runs along the right bank for 20 m.

Section 7: Both upper banks get steep and there are indications of blowdown and slumps having taken place. Rearing trout now are only occasionally observed as the rearing area is now limited to put debris pools between shallow, swift rapids. Survey discontinued. Considerably more boulders are present and bedrock first appears in the substrate. An 5 m. barrier bedrock falls is present 30 m. beyond the end of Section 7.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area D ADF&G No. 101-90-75 Date 8/20/84

1. Reach	1	1	1	1	1	1	1	2	
2. Section	1	2	3	4	5	6	7	8	
3. Section Length (m)	100	100	100	100	100	100	100	100	
4. Gradient	.25	.25	.5	.75	1.5	.75	10	2.5	
5. Water Quality	1								
6. Water Width a. channel	16.0	16.0	11.0	7.0	5.4	17.0	23.0	10.0	7.0
b. water	16.0	7.5	8.0	6.0	5.4	17.0	23.0	8.5	3.0
c. special character	-	-	1	1	1	-	-	-	
7. Water Type % SS	50	55	50	45	45	30	10	10	
SF		5	25	40	45	40	40	75	
DS	50	40	25	15	10	30	50	5	
DF								10	
8. Undercut Banks (m) left	50	50	20	20	20	20	0	0	
right	70	50	25	20	20	20	0	0	
9. Debris Cover % small	0	0	5	10	10	0	0	0	
large	1	1	20	25	25	1	0	0	
10. Riparian Vegetation %	1	1	5	5	5	1	1	1	
11. Substrate %:									
a. boulders						5	5	10	
b. cobble	30	30	25	25	25	25	5	5	
c. gravel	40	50	55	55	55	50	10	10	
d. sand	20	20	20	20	20	20	5	5	
e. organic muck									
f. bedrock							75	70	
g. other blue clay	10								
12. ASA	0	15	20	40	25	15	0	0	
13. Gravel Shape	1	1	1	1	1	1	1	1	
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	50/50	100	100	
b. type	A	A	A	A	A	A/B	B	B	
15. Average Depth (cm)	50	12	8	5	30	10	50	40	
16. Beaver Activity	5	7	7	7	7	7	7	7	
17. Potential Barrier	-	-	-	-	-	-	2	-	
18. Aquatic Vegetation									
a. type	3	23	23	23	23	23	13	1	
b. density	1	1	1	1	1	3	2	3	
19. Sampling	-	-	-	-	y	-	-	-	
20. Rearing Area	95	90	59	60	60	60	60	15	
21. Comments									

Section 1 is very sluggish. It is not quality rearing area, however due to the lack of any cover except the undercut banks. A thin layer of silt covers the entire bottom. Blue clay is present along the right bank. The temperature and pH were 11.5°C and 7.5 respectively. Flow was estimated at .35 m³/sec.

Section 2: A small riffle is present near the start of the Section. The stream nearly forks in half 90 m. into the Section. The left fork is surveyed. The right fork contains excellent rearing habitat with substantial debris and pool

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2, continued: areas. There is also 180 m^2 of good quality ASA present. The substrate is smaller than the left fork. The cobble is flat and moderate fines are present, but the water velocity and depth is perfect for good ASA. The right channel joins the mainstem in Section 5.

Section 3: A few more good riffle areas are present, but the majority of the Section is slow velocity with much pool area. Few rearing trout are observed even though the rearing habitat is high quality.

Section 4: A flood channel leaves from the left with a flow of $.03 \text{ m}^3/\text{sec}$. Only poor quality shallow rearing area is available in the flood channel at the present flow.

Section 5: The channel to the right that left in Section 2, joins the mainstem 60 m. into the Section. Channel also joins the mainstem in this Section. Fair numbers of rearing trout were observed in this Section as there was a heavy debris load present.

Section 6: The quality of the rearing area deteriorates due to lack of cover. Good riffle is present the first 40 m. The last 40 m. is a large pool area.

Algae and periphyton are heavy in the slow moving areas, along with some silt.

Section 7: The upper banks start to get steep and reach a gradient of 80% by the end of the Section. The Section starts in a deep pool. A 2.5 m. stairstep falls is present midway through the Section. The falls is not a complete barrier.

Section 8: The stream becomes a bedrock channel with no ASA and poor quality rearing habitat. The survey was discontinued at the end of the Section at the foot of a 4 m. barrier bedrock falls, with a gradient of 55%. A reconnaissance above the falls revealed a bedrock cataracts 150 m. long with a gradient of 5%.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Smugglers Creek ADF&G No. 101-90-75 Date 8/20/84
Area E

1. Reach	1	1	1	1	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	.5	.75	.75	.75	2	1.5	1.25	1	2
5. Water Quality	1	1	1	1	1	1	1	1	1
6. Water Width a. channel	13	20	15	9	15	18	19	12	16
b. water	13	10	7	6	7	9	9	6.8	12
c. special character	-	1	2	1	1	-	-	-	-
7. Water Type % SS	35	45	40	35	15	30	30	30	15
SF	25	30	35	50	60	50	65	60	70
DS	40	25	25	15	20	20	5	10	15
DF									
8. Undercut Banks (m) left	70	20	40	20	10	0	5	0	0
right	60	40	20	10	10	0	5	5	0
9. Debris Cover % small	3	1	2	2	2	5	0	1	1
large	10	1	10	10	15	20	1	1	1
10. Riparian Vegetation %	1	1	5	1	1	1	1	0	1
11. Substrate %:									
a. boulders				5	15	35	10	35	30
b. cobble	30	40	40	40	40	20	30	30	30
c. gravel	50	45	45	40	35	35	50	30	30
d. sand	15	15	15	15	10	10	10	5	5
e. organic muck									
f. bedrock									
g. other blue clay	5								
12. ASA	10	25	20	20	35	15	40	10	30
13. Gravel Shape	1	1	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	100	100	100	50/50	50/50	100	100	100	100
b. type	A	A	A	A/B	A/B	B	B	B	B
15. Average Depth (cm)	15	15	30	45	25	10	25	25	10
16. Beaver Activity	7	7	7	7	7	7	7	7	7
17. Potential Barrier	-	-	-	-	-	-	-	-	2
18. Aquatic Vegetation									
a. type	2,3	2,3	2,3	2,3	2,3	2,3	-	-	1
b. density	2	1	1	1	1	1	-	-	1
19. Sampling	Y	-	-	-	-	Y	-	-	-
20. Rearing Area	70	70	60	50	30	30	35	40	25
21. Comments									

Section 1: The presence of deep pools and large debris provides good rearing habitat. Algae and silt are heavy in places. There are a few small riffle areas, but the Section is predominately a pool. A 10 m. stretch of blue clay is along the left bank at the end of the Section. The substrate is predominately flat gravel and cobble which is fairly compact and contains a moderate amount of fines. A muskeg seep enters from the right bank at the end of the Section. The temperature and pH were 12.5 °C and 7.5 respectively. Flow was estimated at .35 m³/sec.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: A small tributary enters from a muskeg area on the left bank. A backwater area providing accessory rearing area is present 30 m. into the Section.

Section 4: The left upper bank increases to a 25% gradient. Excellent rearing area is provided and there are many deep pools with cover, but few rearing fish were observed. An extensive braided area is present to the right of the mainstem. Only a trickle of water is flowing to through the braided area, but there are several deep pools present that are capable of providing rearing area.

Section 5: The substrate begins to increase in size, but the last 40 m. of the Section had good ASA.

Section 6: The upper right bank gradient increases in this Section and all braiding ends. A large log jam is present at the end of the Section.

Section 7: The lack of cover in this Section contributes to poor rearing habitat. The rearing habitat continued to be poor quality through Section 9. The first 50 m. is a good riffle area, but the last half of the Section is shallow and slow.

Section 8: The right upper banks gradient increases to 100% and the substrate size continues to enlarge.

Section 9: The survey is discontinued at the end of the Section at the base of a 6 m. barrier falls with a gradient of 60%. There were two more 6 m. barrier falls 50 m. beyond the first falls. A bedrock cataracts about 300 m. in length extends above these barriers before another series of small falls are present.

FISH SAMPLING FORM

ADF&G No. 101-90-75 Date 8/23/84 Stream Name Smugglers Creek
Survey Area Section A H₂O Temp. 16.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0920	0950	Ø	Section 8
2	0920	0950	Ø	Section 8
3	1145	1215	2 SB	Section 21
4	1145	1215	Ø	Section 21

FISH SAMPLING FORM

ADF&G No. _____ Date 9/3/84 Stream Name 101-90-75
 Survey Area B H₂O Temp. 10.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0800	0830	Ø	About 1/2 mile above end of Section 14
2	0800	0830	Ø	About 1/2 mile above end of Section 14

FISH SAMPLING FORM

ADF&G No. 101-90-75 Date 8/20/84 Stream Name _____

Survey Area Area C H₂O Temp. 11⁰C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0800	0935	DV-50,48,55 mm.	Section 1
2	0850	0925	Ø	Section 5

FISH SAMPLING FORM

ADF&G No. 101-90-75 Date 8/20/84 Stream Name _____

Survey Area Area D H₂O Temp. 11.5⁰C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1045	1140	Ø	Section 4

FISH SAMPLING FORM

ADF&G No. 101-90-75 Date 8/20/84 Stream Name Smugglers Creek
 Survey Area Area E H₂O Temp. 12.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1200	1235	SB -4	Section 1
2	1330	1415	Ø	Section 6

PEAK ESCAPEMENT RECORD

101-90-75

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/16/72	2,000			
8/22/73	300			
8/23/76	10,000			
7/31/77	2,000			
8/13/79	3,800			
8/25/81	11,503			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-5 2. Historical Fish PS,CS,SS

Part II.

1. Stream Name Falls Creek 2. ADF&G Catalog No. 101-90-76

3. USGS Map No. Ketchikan, C-6 4. Legal Location R88E,T725, S-30

5. Latitude and Longitude 55°35'50",131°58'30" 6. Agency Unit 05

7. Aerial Photo No. 0029,1373,9, 9-12-73,02190 8. MGMT Area K29-715

9. Estimated Flow .15 m³/sec 10. Flow Stage 1

11. Land Use. a. present mining claims b. Historical mining

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature

15. pH 16. Intertidal Zone a. Gradient 2

b. Bottom type 1. fines 5 2. gravel/small cobble 40

3. large cobble/boulders/bedrock 55

c. ASA Fair - a maximum of 150 m² of area available

d. Schooling one small pool with 20 adult PS was observed

e. Shellfish potential no evidence - Dungeness crab reported in bay

f. Anchorage good at mouth with skiff - extensive tidal flat, however

17. Comments

The ITZ was littered with PS carcasses. About 2,000 PS were observed at the common mouth of 101-90-76 and 101-90-75. It appeared that very shallow and limiting spawning activity also. Many PS were being stranded and dying when high tide began to ebb.

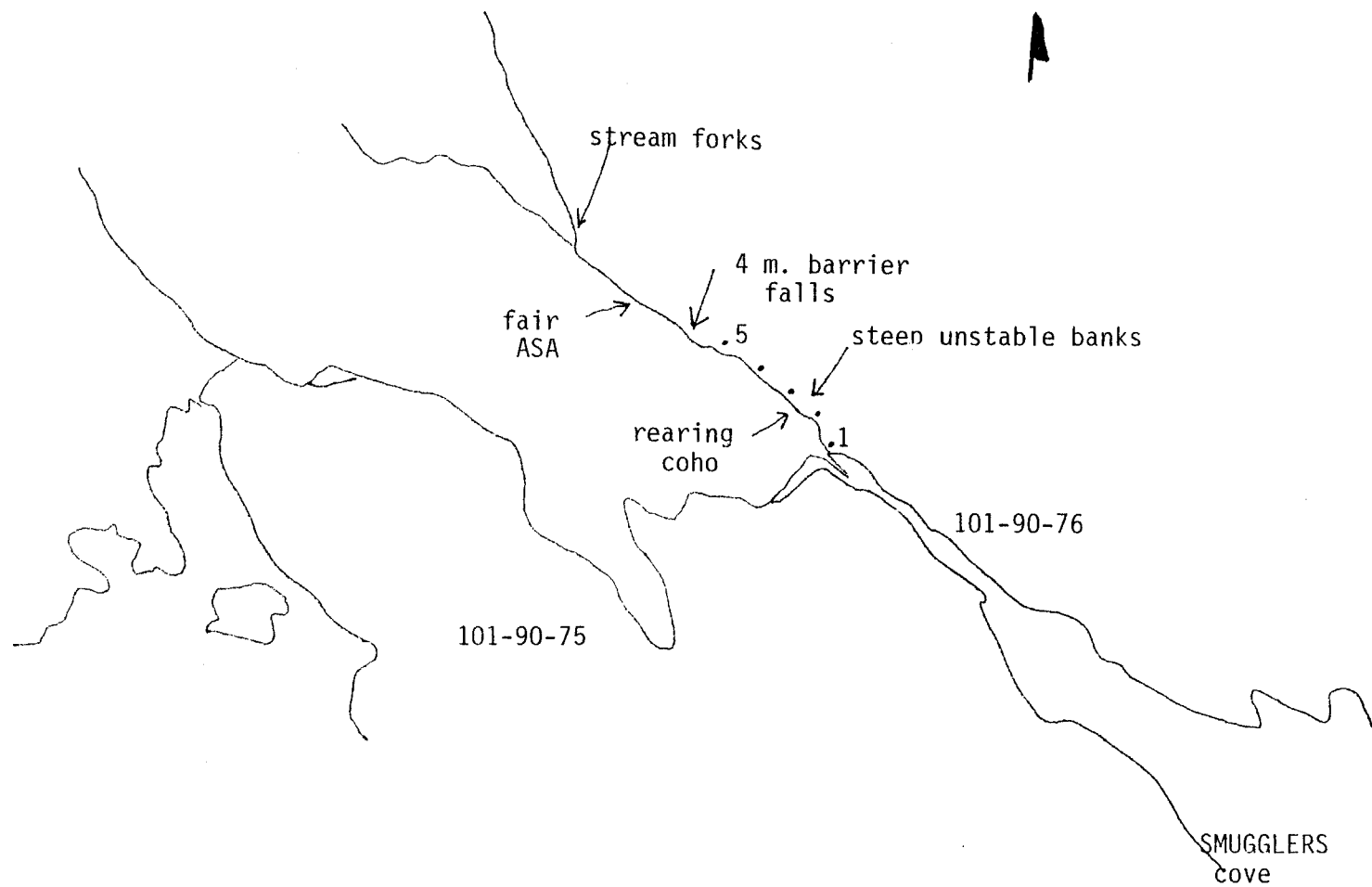
101-90-76 is limited by its small size and a 4 m. barrier falls in Section 5. Rearing coho are observed up to the falls. Adult PS were utilizing the ITZ, but were limited to a few pools in Sections 1 and 2. The stream water depth was limiting PS upstream migration and spawning utilization of the ITZ. A number of small debris falls also were possibly obstructing PS migration.

18. Investigators Burns/Cariello 19. Weather 3

20. Date 8/22/84 21. Time 0800-1030

BASELINE AQUATIC SURVEY, continued

101-90-76, continued: The ASA is only fair quality and is present only in small stretches. The substrate is rather large and is present only in small stretches. The substrate is rather large and stretches of bedrock were present throughout the survey area. The rearing area is not that large and the best quality rearing is limited to deep pools. Better rearing area is available above the barrier falls and there are some stretches of fair quality ASA. The stream forks into two small branches about 300 m. above the falls and contains limited rearing area and ASA.



101-90-76



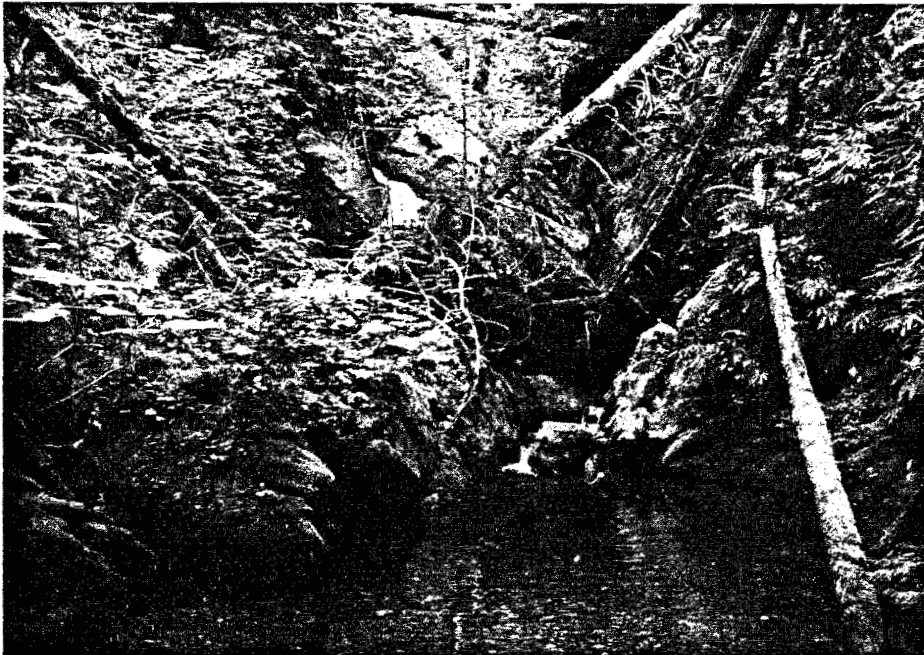
1. Upper ITZ



2. Section 1



3. Section 3: Flagging crosses the stream here.



4. Section 5: 4 m. barrier falls.



5. 200 m. above barrier falls.

101-90-76

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	2.5	10	25					
2	100	2.5	20	50					
3	100	5.0	40	200					
4	100	4.2	10	42					
5	80	5.0	5	20					
Total ASA				337m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Falls Creek ADF&G No. 101-90-76

1. Section Number	1	2	3	4	5					
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-5	C-1.5	C-5	C-5					
4. Incision Depth (m)	.5	.5	.5	.5	1.0					
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	100	100					
b. rubble			20	20						
c. cobble			20	20						
d. decomposed organic mat.										
e. gravel			20	20						
f. sand & silt			30	30						
6. Bed substrate composition										
a. bedrock or boulder	65	50	30	55	55					
b. rubble & cobble	10	25	35	25	25					
c. coarse gravel	10	15	25	10	10					
d. fine gravel & sand	15	10	10	10	10					
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Falls Creek ADF&G No. 101-90-76 Date 8/22/84

1. Reach	1	1	1	1	2				
2. Section	1	2	3	4	5				
3. Section Length (m)	100	100	100	100	80				
4. Gradient	3	4.5	3.5	4	8.5				
5. Water Quality	1								
6. Water Width a. channel	12.5	8	6.8	6	5.5				
b. water	2.5	2.5	5.0	4.2	5				
c. special character	-	1	-	-	-				
7. Water Type % SS	35	30	40	25	20				
SF	65	65	60	65	60				
DS		10		10	20				
DF									
8. Undercut Banks (m) left	0	0	0	0	0				
right	0	0	0	0	0				
9. Debris Cover % small	3	2	1	2	2				
large	10	10	8	5	10				
10. Riparian Vegetation %	15	10	10	5	5				
11. Substrate %:									
a. boulders	10	15	20	35	35				
b. cobble	10	25	35	25	25				
c. gravel	20	20	30	15	15				
d. sand	5	5	5	5	5				
e. organic muck									
f. bedrock	55	35	10	20	20				
g. other									
12. ASA	10	20	40	10	5				
13. Gravel Shape	1/2	1	1	1	1				
14. Streambank Vegetation									
a. percentage	100	50/50	50/50	100	100				
b. type	B	B/D	B/D	D	D				
15. Average Depth (cm)	5	2.5	5.0	10	10				
16. Beaver Activity	5	5	5	5	5				
17. Potential Barrier	-	-	-	-	2				
18. Aquatic Vegetation									
a. type	2/3	1/3	1/3	1/3	1/3				
b. density	2	1	1	1	1				
19. Sampling	-	Y	-	-	Y				
20. Rearing Area	25	20	40	30	40				
21. Comments									

Section 1: The upper banks have a gradient of 70% and show signs of being logged. The rearing habitat lacks undercut banks and only a few pool areas are provided. A small tributary with a gradient of 25% enters from the right bank. The only ASA present was in the first 30 m. Beyond here the present low flow was a barrier to pinks.

Section 2: Several pools are found in Section 1 and 2 below small debris falls. About 10 adult PS were found in two of these pools. No PS were observed above

Section 2. Several small stretches of fair quality ASA are present.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2, continued: The upper banks increase in gradient to 130% and show signs of instability. Fair numbers of rearing coho and trout are observed, although the coho seem to be limited to the few deep pools. A school of about 20 rearing coho are observed in one such pool.

Section 3: Flagging crosses stream here. An old abandoned waterline runs up the right bank. The first 50 m. had good ASA, but the substrate was mostly flat cobble. More boulder and bedrock are present the last 50 m.

Section 4: The gradient increases to 10% at the end of the Section.

Section 5: A few rearing coho are observed up to the barrier falls 80 m. into Section 5. The falls is a 4 m. near-vertical barrier. There were also several other smaller falls through bedrock and debris present below the barrier falls. Twenty meters above the falls is a 1 m. debris bedrock falls. The gradient is between 3 and 5% for the next 250 m. with a 1 m. debris falls present. There are a couple 30 m. stretches of fair ASA and good rearing area available. The stream then soon forks in half and the gradient increases to 7%. The substrate turns to boulder and bedrock with only patches of ASA and rearing area available.

FISH SAMPLING FORM

ADF&G No. 101-90-76 Date 8/22/84 Stream Name Falls Creek
 Survey Area A 1-5 H₂O Temp. Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0845	1015	SS -75,60,60 55,55,65, 75,60,65 mm. CT-130 mm.	Section 1
2	0920	1000	SS -65	Section 5

101-90-76
PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/4/76	700			
8/9/77	2,000			
8/21/78	3,600			
8/23/79	1,125			
8/13/80	5,000			
8/25/81	11,503			
8/12/82	3,500			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-4 2. Historical Fish PS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-88

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,T71S.S-13

5. Latitude and Longitude 55°42'35",131°51'25" 6. Agency Unit 05

7. Aerial Photo No. 0032,1373,205,9-12-73,02190 8. MGMT Area K29 719

9. Estimated Flow .15 m³/sec 10. Flow Stage 2

11. Land Use. a. present log storage in bay b. Historical none observed

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature 12.5°C

15. pH 6.5 16. Intertidal Zone _____ a. Gradient 3

b. Bottom type 1. fines 1 2. gravel/small cobble 35

3. large cobble/boulders/bedrock 64

c. ASA poor - only a small stretch of ASA is present between the boulders

d. Schooling only in bay

e. Shellfish potential evidence of Dungeness crab and clams

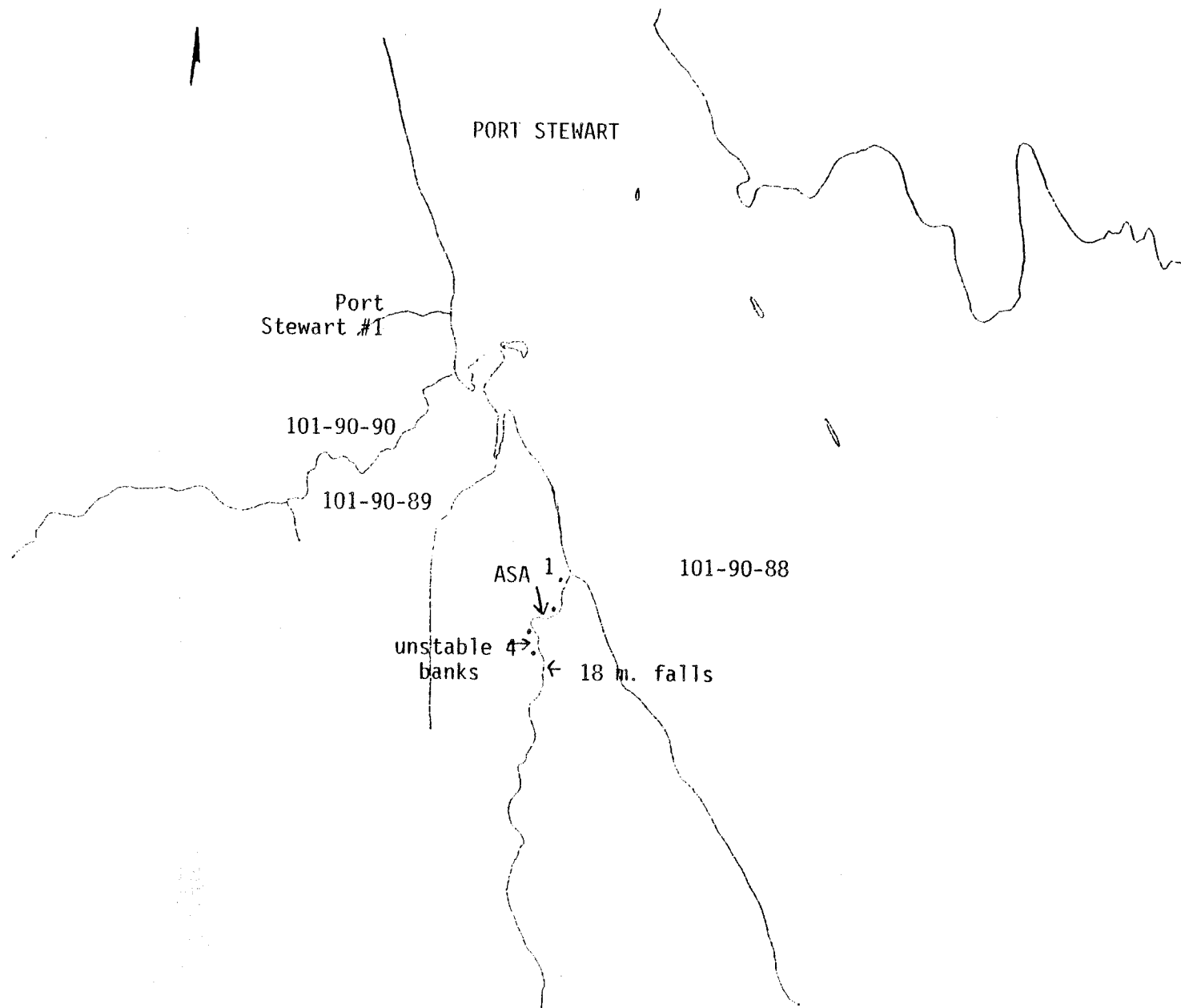
f. Anchorage fair - subject to SW winds

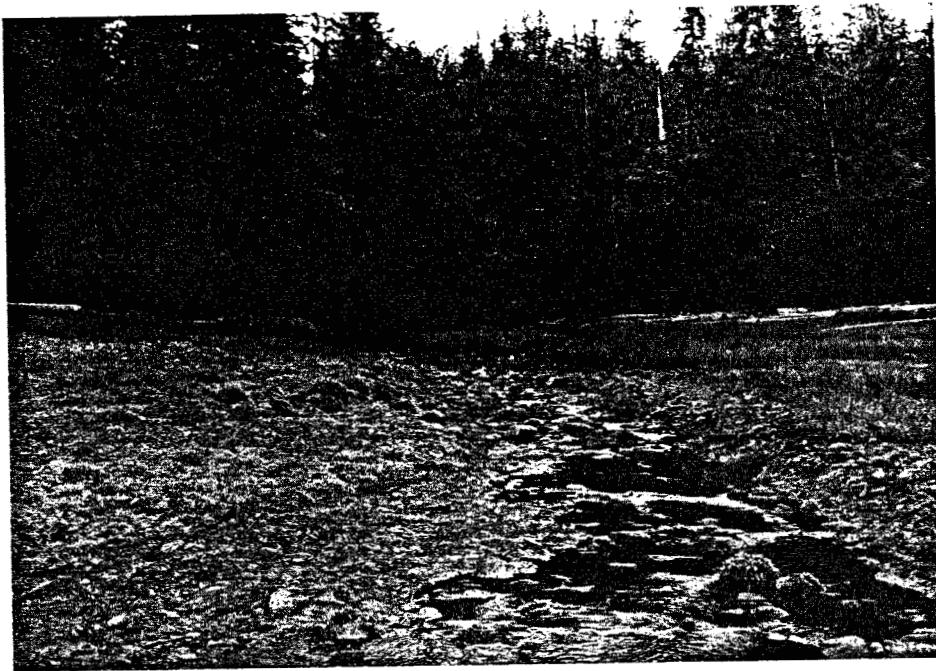
17. Comments

101-90-88 is limited by an 18 m. falls 400 m. from the ITZ. There is only one stretch of good quality ASA below the falls. The substrate is for the most part large flat cobble between stretches of bedrock. The rearing habitat is poor quality due to a lack of large debris, undercut banks, and overhanging riparian vegetation. Rearing coho were observed and trapped only in the ITZ.

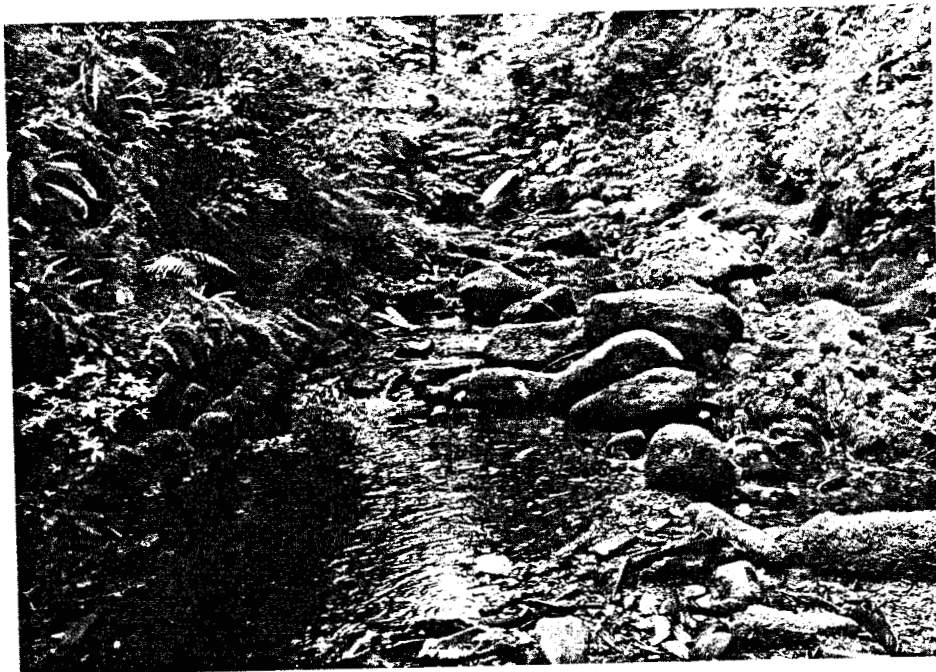
18. Investigators Burns/Cariello 19. Weather 1

20. Date 7/29/84 21. Time 0830-1030

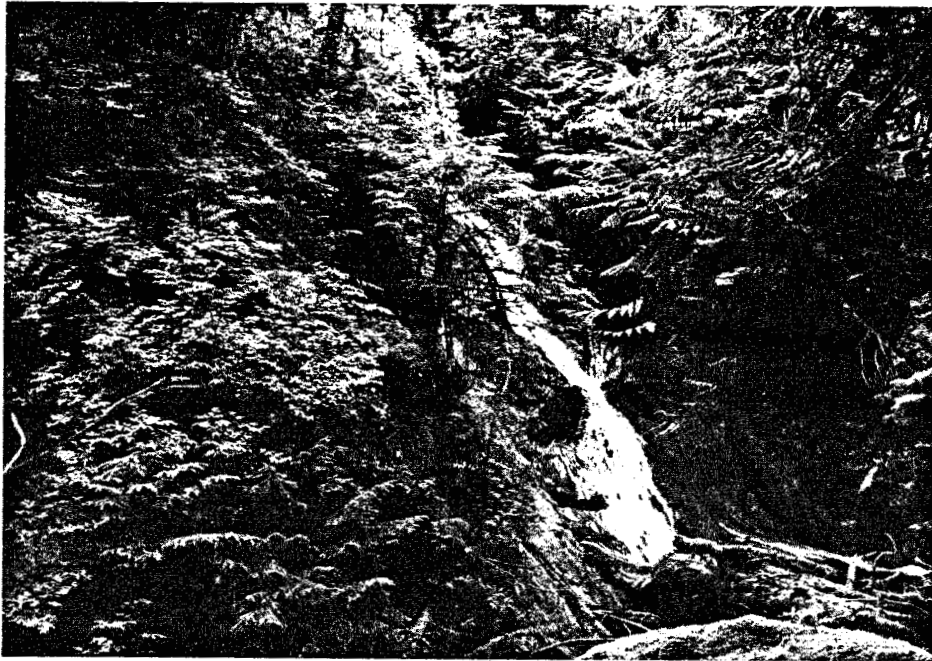




1. ITZ: A small amount of ASA was available only at the upper end of the ITZ.



2. Typical habitat in Section 3. A lack of ASA and rearing habitat is evident.



3. 18 m. falls in Section 4.

101-90-88

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	2.5	1	2.5					
2	100	2.1	25	52.5					
3	100	2.9	5	14.5					
4	50	2.0	1	2.0					
Total ASA				71.5m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-88

1. Section Number	1	2	3	4						
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5						
4. Incision Depth (m)	.5	1	.5	.5						
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	100						
b. rubble		20	15							
c. cobble		35	35							
d. decomposed organic mat.										
e. gravel		15	20							
f. sand & silt		15	20							
6. Bed substrate composition										
a. bedrock or boulder	94	30	64	40						
b. rubble & cobble	5	49	20	40						
c. coarse gravel	1	20	15	10						
d. fine gravel & sand		1	1	10						
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-88 Date 7/29/84

1. Reach	1	1	1	1					
2. Section	1	2	3	4					
3. Section Length (m)	100	100	100	100					
4. Gradient	9	7.5	5	10					
5. Water Quality	1	1	1	1					
6. Water Width a. channel	7.4	6.7	6.6	5.2					
b. water	2.5	2.1	2.9	2					
c. special character	-	-	-	-					
7. Water Type % SS	10	10	15	15					
SF	80	85	80	80					
DS	10	5	5	5					
DF									
8. Undercut Banks (m) left	0	0	5	0					
right	0	0	10	0					
9. Debris Cover % small	1	1	1	1					
large	3	10	5	2					
10. Riparian Vegetation %	10	10	15	10					
11. Substrate %:									
a. boulders	10	30	30	20					
b. cobble	5	48	20	40					
c. gravel	1	20	15	15					
d. sand		1	1	5					
e. organic muck									
f. bedrock	84	1	34	20					
g. other									
12. ASA	1	25	5	1					
13. Gravel Shape	1	1	1	1					
14. Streambank Vegetation									
a. percentage	100	100	100	100					
b. type	B	B	B	D					
15. Average Depth (cm)	17	20	15	8					
16. Beaver Activity	5	5	5	5					
17. Potential Barrier	2			2					
18. Aquatic Vegetation									
a. type	3/1	3,1	3,1	3,1					
b. density	2/3	3	3	3					
19. Sampling	-	Y	-	-					
20. Rearing Area	15	10	15	15					
21. Comments									

Section 1: The stream is a bedrock chute for most of the Section with little ASA or rearing habitat. Bedrock is present along both lower banks. A 1.5 m. boulder falls is present near the start of the Section.

Section 2: The first 60 m. provides good ASA with nice clean, although flat gravel. The rearing habitat is not good quality due to the lack of cover.

Section 3: The upper banks are steep and unstable.

Section 4: The stream enters a V-notch with unstable banks of fractured bedrock and a thin layer of topsoil. An 18 m. barrier falls is present 50 m. into the

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 4, continued: Section. The survey is discontinued at the falls. A 150 m. stretch providing good ASA and rearing habitat is above the falls. The gradient is 20% and the substrate is large flat cobble. The stream gradient then increases and the substrate turns to boulders. No rearing fish were observed.

FISH SAMPLING FORM

ADF&G No. 101-90-88 Date 7/29/84 Stream Name _____

Survey Area _____ H₂O Temp. 12.5⁰C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0920	1015	Ø	Section 2
2	0945	1015	Ø	Section 2
3	1025	1040	SS 75 mm 60 mm 60 mm	ITZ

101-90-88
PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
9/7/76	250			
8/13/78	500			
8/13/80	500			
8/25/81	1,500			
8/5/82	2,503			uncounted fish present

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-7 2. Historical Fish PS,CS,SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-89

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,T71S, S-13

5. Latitude and Longitude 55°42'50", 131°51'50" 6. Agency Unit 05

7. Aerial Photo No. 0032,1373,205,9-12-73,02190 8. MGMT Area K29-719

9. Estimated Flow .36 m³/sec 10. Flow Stage 2

11. Land Use. a. present none observed b. Historical hand logging

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature 12°C

15. pH 6.5 16. Intertidal Zone _____ a. Gradient 1.5

b. Bottom type 1. fines 15 2. gravel/small cobble 40

3. large cobble/boulders/bedrock 45

c. ASA poor

d. Schooling only in bay

e. Shellfish potential evidence of Butter clams and Dungeness crab observed

f. Anchorage poor - extensive tide flat

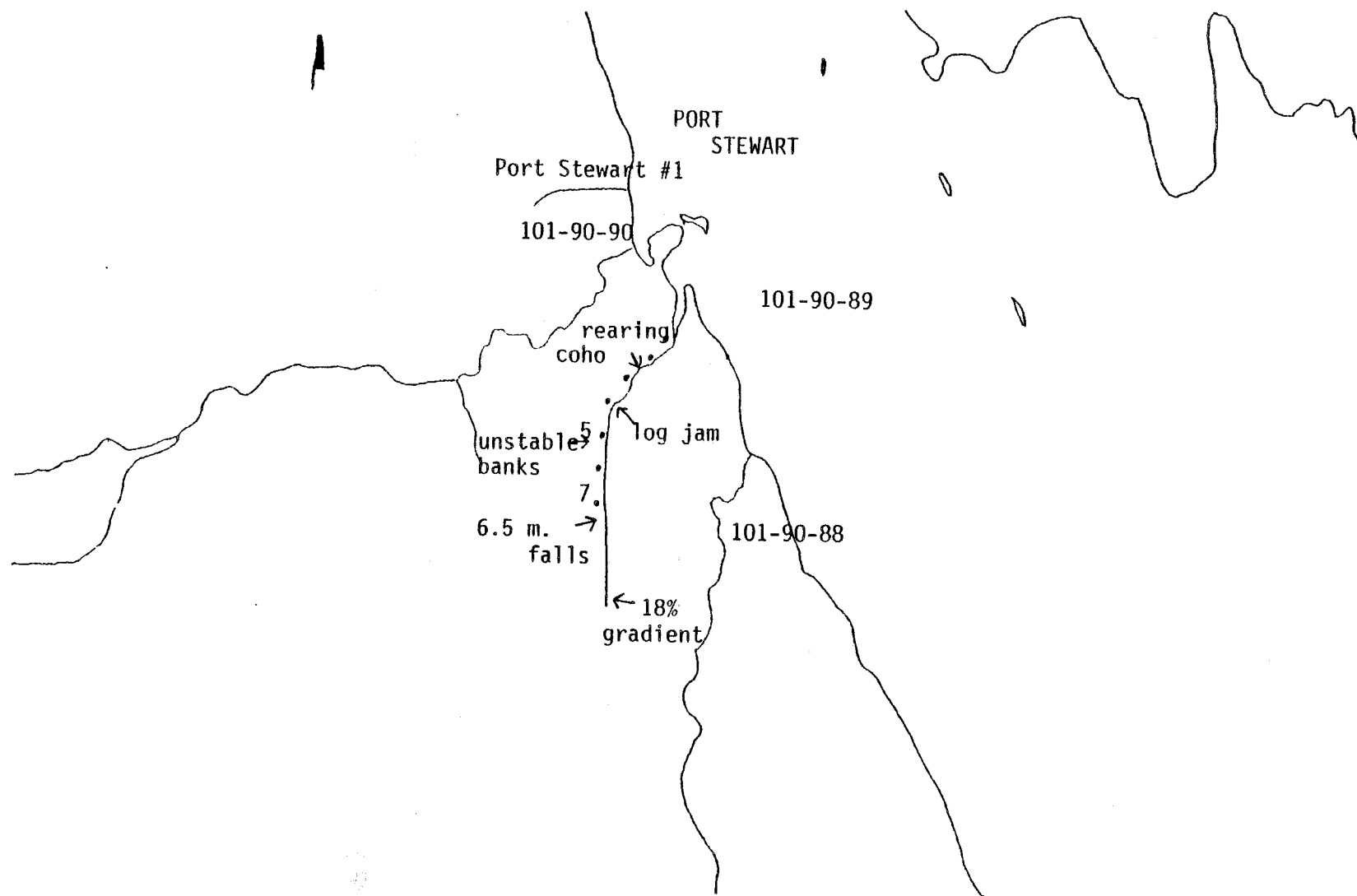
17. Comments

The ITZ substrate is flat, contains fines and is covered with a dense filamentous algae growth.

101-90-89 contains limited amounts of ASA throughout the survey, but it is rather poor quality due to its large size and flat shape. Rearing coho were observed up to a log jam obstacle in Section 4. There are several other potential barriers in the lower Sections that could make fish passage difficult. A definite 6.5 m. barrier falls is present at the end of Section 7. Rearing habitat is adequate up to Section 5 due to a heavy debris load. There is a lack of overhanging riparian vegetation and undercut banks for cover.

18. Investigators Burns/Cariello 19. Weather 1

20. Date 7/29/84 21. Time 1040-1330





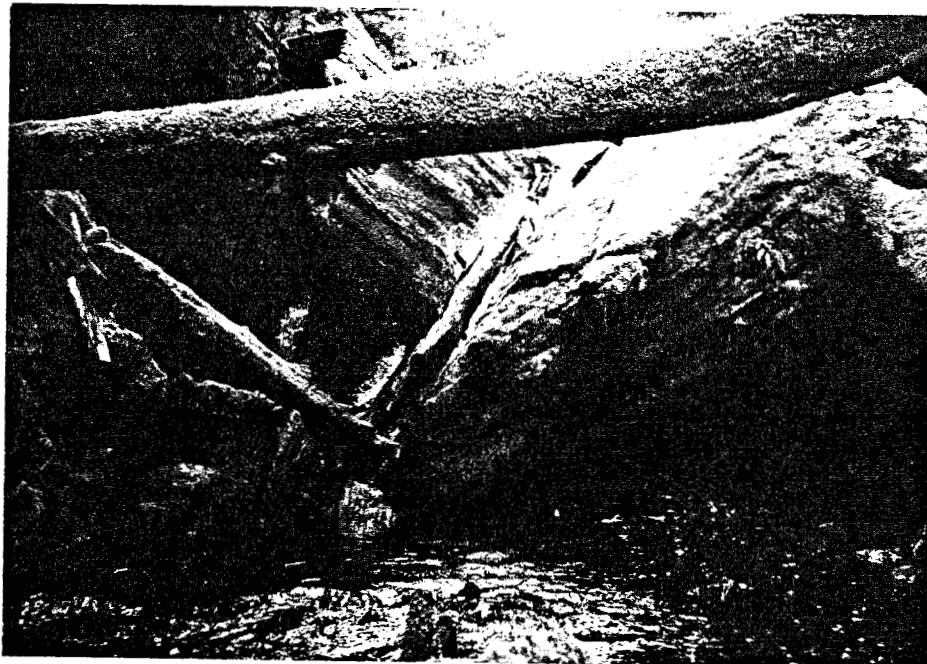
1. ITZ: The substrate is rather compact and filamentous algae is present.



2. Typical habitat in Section 2. The ASA is poor quality due to the compact, flat substrate.



3. A potential log jam barrier in Section 4.



4. A 6.5 m. barrier at the end of the survey in Section 7.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	8.4	1	8.4					
2	100	5.7	1	5.7					
3	100	10.1	1	10.1					
4	100	9.4	15	141					
5	100	7.6	1	7.6					
6	100	4.1	1	4.1					
7	100	4.9	0	0					

Total 176.9m²

Available ASA below barrier 24.2m²

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-89

1. Section Number	1	2	3	4	5	6	7			
2. Channel Type										
3. Riparian Vegetation Class	C-6	C-5	C-5	C-5	C-5	C-5	C-5			
4. Incision Depth (m)	.3	2	2	1.5	2	1	2.5	3		
5. Lower Bank Composition										
a. bedrock or boulder	30	100	100	45	100	100	100			
b. rubble	35			20						
c. cobble	20			20						
d. decomposed organic mat.										
e. gravel	5			5						
f. sand & silt	15			10						
6. Bed substrate composition										
a. bedrock or boulder	40	64	79	20	35	75	85			
b. rubble & cobble	40	30	15	69	60	20	13			
c. coarse gravel	10	5	5	10	5	5	2			
d. fine gravel & sand	10	1	1	1						
e. silt-clay deposits										

7. Comments

Section 7: Incision 3 m. on right bank, .1 m. on left bank.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-89 Date 7/29/84

1. Reach	1	1	1	1	1	2	2		
2. Section	1	2	3	4	5	6	7		
3. Section Length (m)	100	100	100	100	100	100	100		
4. Gradient	4	5	7	4	4.5	7.5	9		
5. Water Quality	1	1	1	1	1	1	1		
6. Water Width a. channel	15	6.6	12.3	11.2	12.5	8.6	6.4	14	
b. water	8.4	5.7	10.1	9.4	7.6	4.1	4.9	7.8	
c. special character	3	-	-	-	-	-	-	-	
7. Water Type % SS	15	15	15	35	15	10	10		
SF	65	75	75	55	80	90	80		
DS	20	10	10	10	5		10		
DF									
8. Undercut Banks (m) left	10	0	0	0	0	0	0		
right	20	0	0	0	0	0	0		
9. Debris Cover % small	2	2	1	5	1	0	0		
large	15	15	5	20	1	2	5		
10. Riparian Vegetation %	10	5	5	5	5	5	5		
11. Substrate %:									
a. boulders	40	59	30	20	25	45	50		
b. cobble	40	30	15	69	60	20	13		
c. gravel	15	5	5	10	5	5	2		
d. sand	5	1	1	1					
e. organic muck									
f. bedrock		5	49		10	30	35		
g. other									
12. ASA	1	1	1	15	1	1	0		
13. Gravel Shape	1	1	1	1	1	1	1		
14. Streambank Vegetation									
a. percentage	50/50	100	100	100	100	100	100		
b. type	A/B	B	B	B	B	D	D		
15. Average Depth (cm)	10	60	20	15	5	15	30		
16. Beaver Activity	5	5	5	5	5	5	5		
17. Potential Barrier	3		1	3					
18. Aquatic Vegetation									
a. type	3	3/1,2	3/1	3	3	3	3		
b. density	2	2/3	2/3	2	2	2	2		
19. Sampling	Y	Y	-	-	-	-	-		
20. Rearing Area	35	25	25	30	10	10	15		
21. Comments									

Section 1: The substrate is large flat cobble and small boulders and is rather compact. The ASA is of questionable quality due to the size and shape of the substrate. The rearing habitat is provided for the most part in a few deep pools and by a moderate amount of old, moss covered large logs. Evidence of handlogging is visible on both banks. A high water channel is present around a large debris dam that is a potential barrier at low water flows. Fair numbers of rearing coho are observed above the log jam.

Section 2: A heavy debris load is present the first 20 m.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: A 10 m. bedrock chute with a good pool at the base is present 20 m. into the Section. It is not a barrier, but could be an obstacle with high water discharges.

Section 4: A possible barrier log jam is present at the start of the Section. The upper banks are steep. (90% gradient) and exposed soil is present. The left bank is fractured bedrock covered with a thin layer of soil. There is little cover provided other than what is present in the log jam.

Section 6: The upper banks have a gradient of 100% and continue to be unstable.

Section 7: No rearing fish have been observed above the log jam. The survey is discontinued at the end of the Section where a 6.5 m. barrier falls is present. Above the falls the gradient is 5% and the substrate is boulders for 150 m. The gradient then increases to 18% with large boulders and whitewater prevalent.

FISH SAMPLING FORM

ADF&G No. 101-90-89 Date 7/29/84 Stream Name _____Survey Area A H₂O Temp. 12⁰ Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1100	1300	SS -75,75,85,90, 95,95,55,55, 55,50,60,50 mm.	Section 1
2	1115	1315	SS -60 mm.	Section 2

PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
9/7/76	1,500			
8/11/80	1,000			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-4 2. Historical Fish PS,CS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-90

3. USGS Map No. Ketchikan C-6 4. Legal Location R88E,S71S,S-13

5. Latitude and Longitude 55°42'55",131°51'45" 6. Agency Unit 05

7. Aerial Photo No. 0032,1373,205,9-12-73,02190 8. MGMT Area K29-719

9. Estimated Flow .45 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical logging

12. Temperature Sensitivity and/or origin 5,1

13. Access 2 14. Stream Temperature 16°

15. pH 6.5 16. Intertidal Zone a. Gradient high tide

b. Bottom type 1. fines high tide 2. gravel/small cobble _____

3. large cobble/boulders/bedrock _____

c. ASA high tide

d. Schooling high tide

e. Shellfish potential evidence of Butter clams and Dungeness crab

f. Anchorage fair, extensive tidal flat present

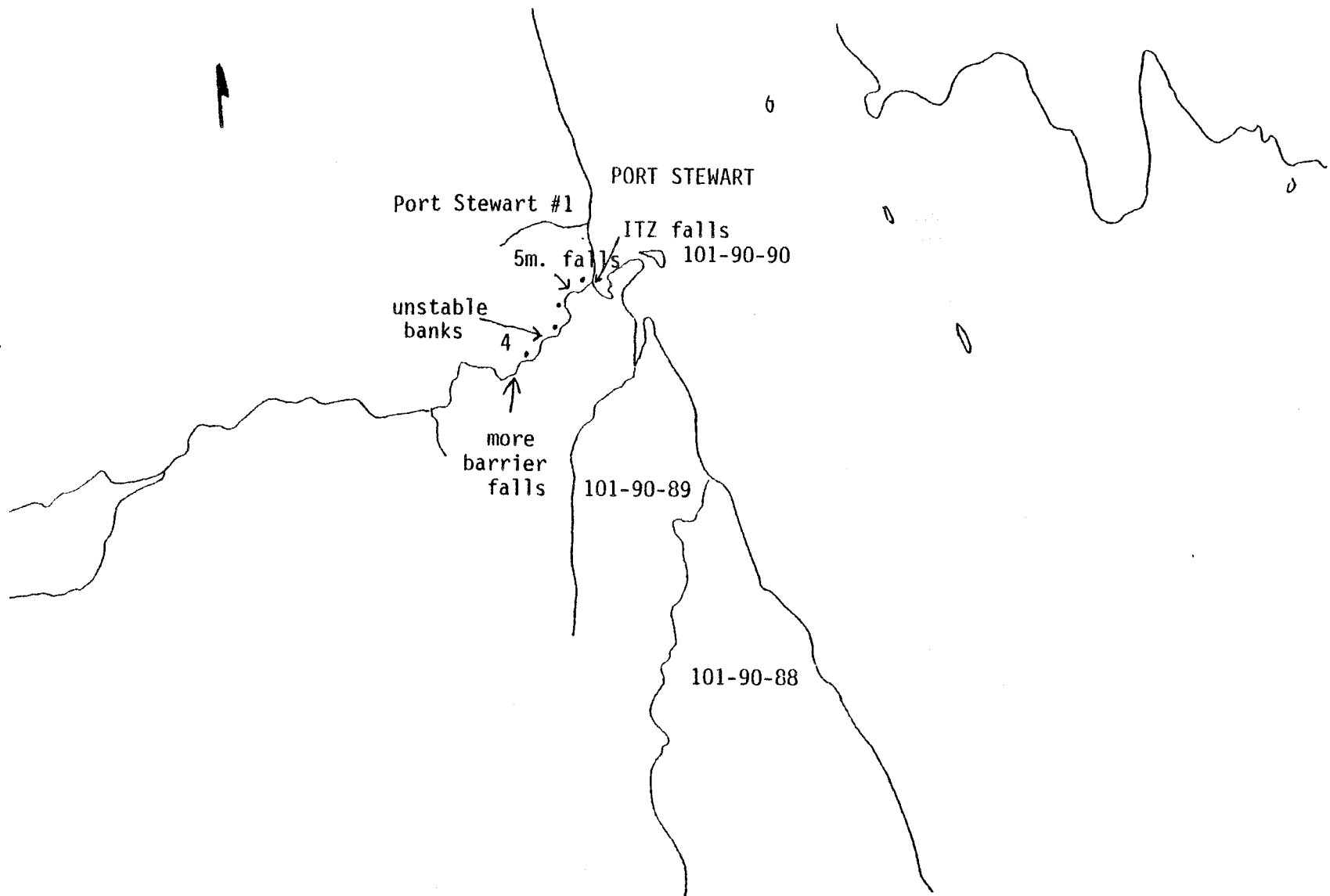
17. Comments

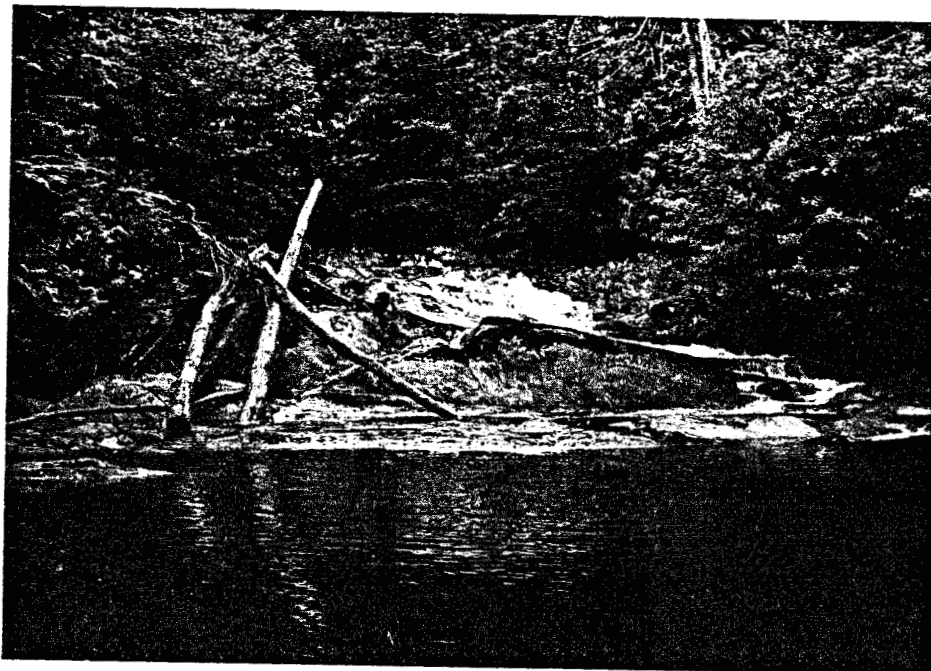
The ITZ substrate and gradient could not be determined since it was high tide during the survey. A falls with a vertical rise of 6 m. over a horizontal distance of about 20 m. is present at the upper end of the ITZ. The gradient of the bedrock falls is 30%. The falls are a barrier to PS but coho might possibly be able to negotiate the obstacle at thigh tide. There are several scoured pits on the face of the falls.

101-90-90 has a potential barrier falls at the head of the ITZ. Fifty meters past here is a definite 6 m barrier of Section 4. A small amount of ASA is found in Section 1 and 2 only. The rearing habitat is composed of pools and and there is little large debris or undercut banks. No rearing fish were observed throughout the survey. The ITZ was not surveyed due to the tide stage.

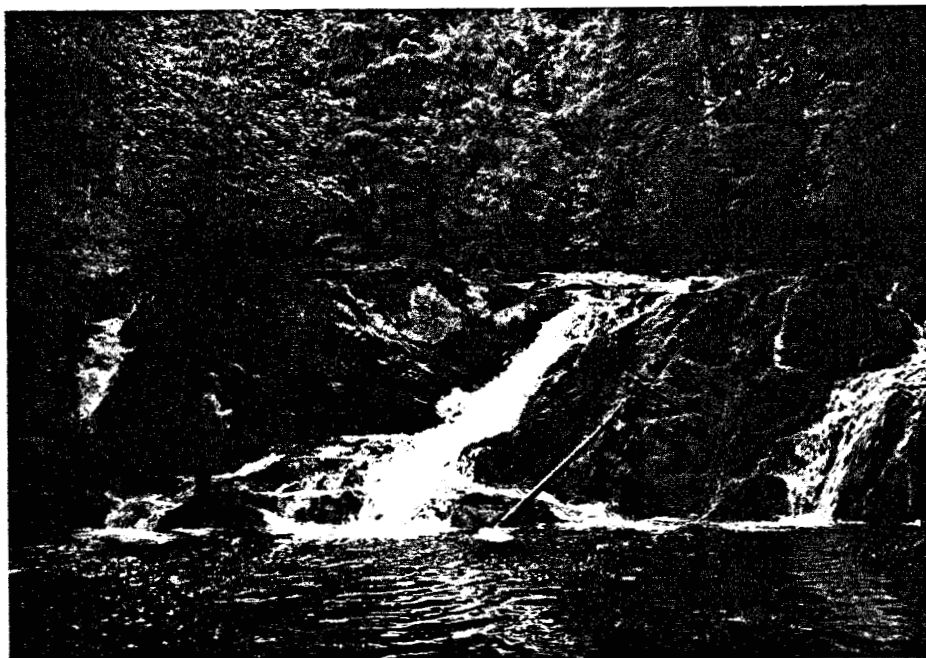
18. Investigators Burns/Cariello -632- 19. Weather 1

20. Date 7/29/84 21. Time 1330-1530





1. Stairstep falls at end of ITZ.



2. Section 1: A 4 m. barrier falls 50 m. into the Section.



3. Section 2: Large flat cobble is found above the falls in Section 1.



4. Habitat beyond a series of barrier falls in Section 4.

101-90-90

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	10.5	1	10.5					
2	100	8.0	15	120					
3	100	15.0	0	0					
4	100	7.0	0	0					
Total				130.5m ²					

Available ASA below barrier. There is some ASA in the ITZ below the barrier falls, but could not be determined due to high tide.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-90

1. Section Number	1	2	3	4						
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5						
4. Incision Depth (m)	1	.3	.3	1.5						
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	100						
b. rubble										
c. cobble										
d. decomposed organic mat.										
e. gravel										
f. sand & silt										
6. Bed substrate composition										
a. bedrock or boulder	75	60	94	100						
b. rubble & cobble	20	30	5							
c. coarse gravel	5	10	1							
d. fine gravel & sand										
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-90 Date 7/29/84

1. Reach	1	1	1	1					
2. Section	1	2	3	4					
3. Section Length (m)	100	100	100	100					
4. Gradient	6	2.5	9	10					
5. Water Quality	3	3	3	3					
6. Water Width a. channel	11.5	10.5	16	15	9				
b. water	10.5	8	15	7	9				
c. special character	-	-	-	-					
7. Water Type % SS	20	50	20	25					
SF	20	50	40	25					
DS	40		15	25					
DF	20		15	25					
8. Undercut Banks (m) left	0	0	0	0					
right	0	0	0	0					
9. Debris Cover % small	0	0	0	0					
large	4	2	2	0					
10. Riparian Vegetation %	0	5	5	5					
11. Substrate %:									
a. boulders	15	30	35	35					
b. cobble	20	30	5						
c. gravel	5	10	1						
d. sand									
e. organic muck									
f. bedrock	60	30	58	65					
g. other									
12. ASA	1	15	0	0					
13. Gravel Shape	1	1	1	1					
14. Streambank Vegetation									
a. percentage	100	100	100	100					
b. type	B	B	B	B					
15. Average Depth (cm)	37	13	15	25					
16. Beaver Activity	5	5	5	5					
17. Potential Barrier	2	2	2	2,1					
18. Aquatic Vegetation									
a. type	1/2	1	1	1					
b. density	2/3	3	2	2					
19. Sampling									
20. Rearing Area	40	50	35	25					
21. Comments									

Section 1 is started above the falls at the head of the ITZ. The substrate is predominately bedrock and only a trace of ASA is present. The rearing habitat provided is lacking in cover. A second set of falls is present midway through the Section. The falls have vertical rise of 4 to 6 m. and are a probable barrier to all species.

Section 2: The substrate is composed of large flat schistose type rock. The ASA provided is of questionable quality due to the size and shape of the substrate

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2, continued: The rearing area in this Section as well as the remaining area surveyed lacks cover due to the absence of debris, undercut banks and overhanging vegetation. Skunk cabbage was observed growing in the stream.

Section 3: The upper right bank is very unstable.

Section 4: Another 3 to 4 m. barrier falls is present 50 m. into the Section. Above the falls is a 15 to 20 m. high velocity stretch through bedrock and boulders. The upper banks are unstable and several spruce have recently been blown down on the right bank. The survey is discontinued at the end of Section 4. The next 100 m. contains two more barrier bedrock falls, each 6 m. in height. A 2 m possible bedrock barrier is present a short distance above these falls, each 6 m. in height. A 2 m. possible bedrock barrier is present a short distance above these falls. The gradient then decreases to 2% for the next 350 m. The substrate is bedrock for 250 m. of this stretch and large cobble/bedrock for the last 100 m. More barrier falls are present above this stretch.

FISH SAMPLING FORM

ADF&G No. 101-90-90 Date 7/29/84 Stream Name

Survey Area A H₂O Temp. 16°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1440	1520	Ø	Section 2

101-90-90
PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/6/78	2,000			
8/23/79	120			
8/3/81	1,500			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas _____ 2. Historical Fish _____

Part II.

1. Stream Name Port Stewart #1 2. ADF&G Catalog No. _____
3. USGS Map No. Ketchikan C-6 4. Legal Location R88E, T71S, S-13
5. Latitude and Longitude 55°43', 131°51'48" 6. Agency Unit 05
7. Aerial Photo No. 0032, 1373, 205, 9-12-73 02190 8. MGMT Area K29-719
9. Estimated Flow .09 m³/sec 10. Flow Stage 2
11. Land Use a. present none observed b. historical none observed
12. Temperature Sensitivity and/or origin 5
13. Access 2 14. Stream Temperature -
15. pH - 16. Intertidal Zone a. Gradient high tide
b. Bottom type 1. fines high tide 2. gravel/small cobble _____
3. large cobble/boulders/bedrock _____
c. ASA high tide
d. Schooling high tide
e. Shellfish potential evidence of butter clams and Dungeness crab
f. Anchorage extensive tidal flat

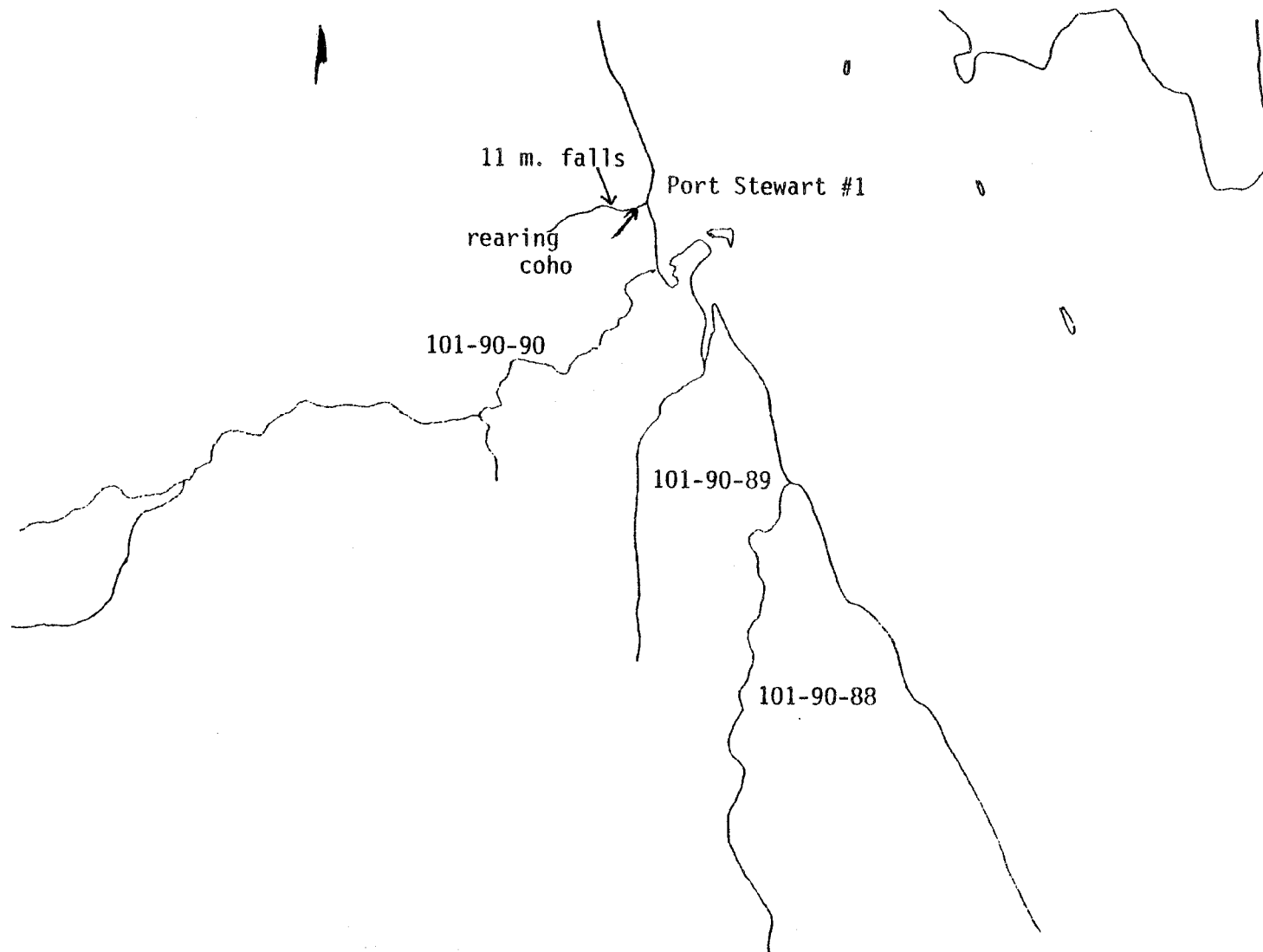
17. Comments

The ITZ could not be surveyed due to the tide stage.

Port Stewart #1 has an 11 m. barrier falls within a 100 meters of the ITZ. It is an anadromous stream however, even though very limited ASA and rearing area is available. There are just traces of ASA at the base of the falls and in a pool area 20 meters above the ITZ. This small pond area provides the only real rearing habitat below the falls also.

Rearing coho were observed and trapped in this pool area. The rearing coho could not have moved upstream to this pool due to a 1 m. debris jam immediately below the pool.

18. Investigators Burns/Cariello 19. Weather 6
20. Date 7/29/84 -642- 21. Time 1600-1630



Port Stewart #1



1. Typical habitat ITZ.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/29/84 Stream Name Port Stewart #1
 Survey Area _____ H₂O Temp. -- Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1605	1630	SS -55,55,55,55, 70,55,60,55, 55,50	30 meters above ITZ

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-11, B 1-4, C 1-4 2. Historical Fish ps,ss

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-96

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E,T70S,S-32

5. Latitude and Longitude 55°45'10",131°48'10" 6. Agency Unit 05

7. Aerial Photo No. 0033,573,103,8-8-73, 02190 8. MGMT Area K29-723

9. Estimated Flow .55 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical logging

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature 11.5°C

15. pH 6.5 16. Intertidal Zone a. Gradient 2.5%

b. Bottom type 1. fines 20 2. gravel/small cobble 30

3. large cobble/boulders/bedrock 50

c. ASA Fair

d. Schooling Several small pools are present

e. Shellfish potential only mussels were observed

f. Anchorage fair for skiff, unprotected however

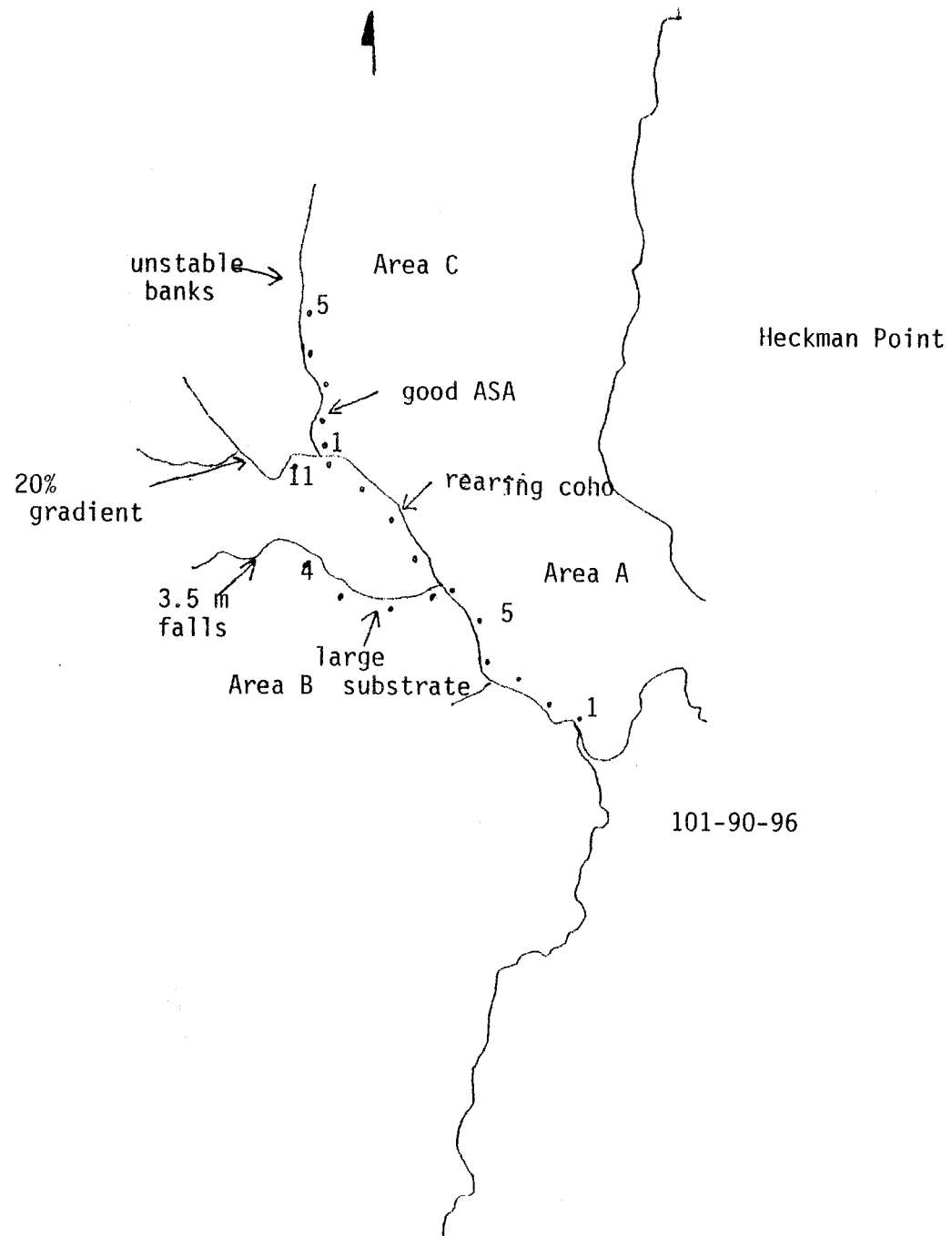
17. Comments

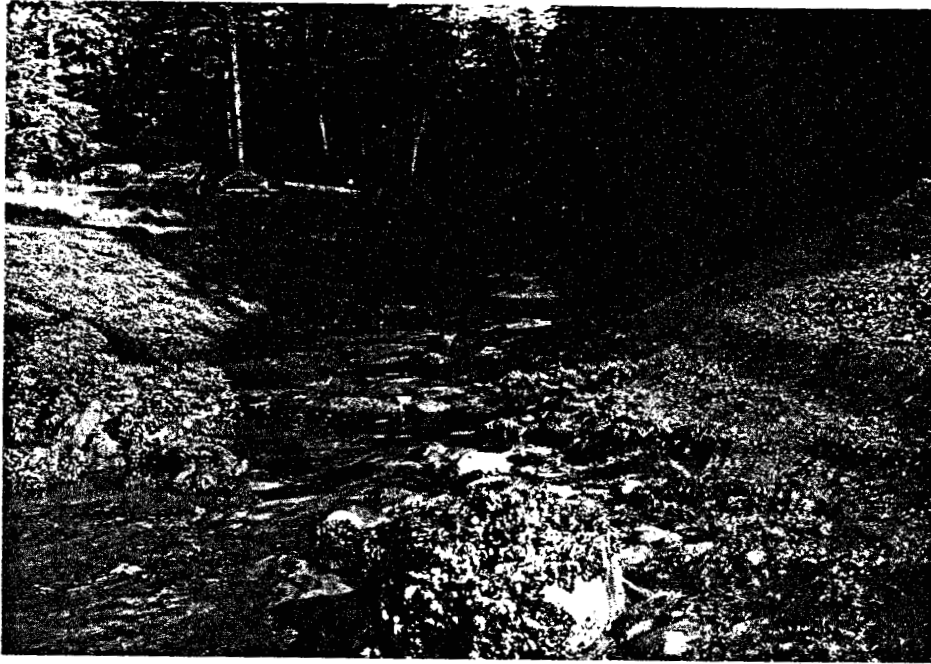
The upper ITZ has a 50 m. stretch 3 m. wide with 30% ASA. Two adult PS carcasses were found in the upper ITZ, but no PS were observed up the stream.

101-90-96 contains a fair amount of ASA. The substrate however, tends to be flat and is predominately large cobble. Coho appear to have success utilizing the substrate however, as rearing fish were observed 1200 m. from the ITZ in Area C. The rearing habitat is limited by the lack of consistent debris and undercut banks. The best rearing habitat was present in Sections 1 through 8 of Area A and the first two Sections of Area C. The best ASA was also found in these areas. The stream appears to be subject to high water discharges.

18. Investigators Burns/Cariello 19. Weather 6

20. Date 7/28/84 -646- 21. Time 0800-1500





1. Lower ITZ: The upper ITZ contains a 50 m. stretch that provides fair quality ASA.



2. Typical flat substrate in Section 3.

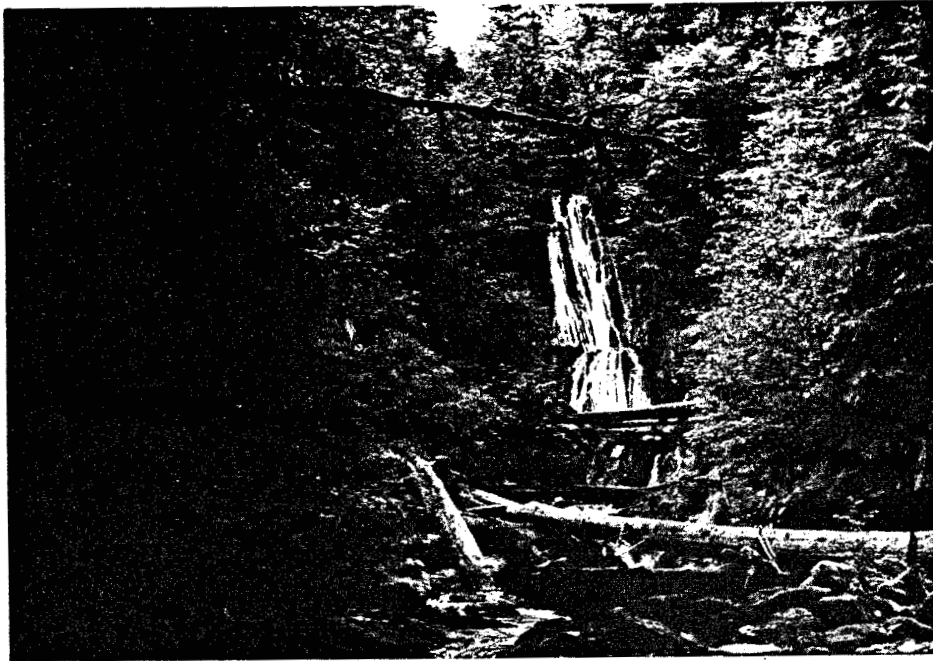
101-90-96



3. Habitat above end of survey in Section 11.
Area A.



4. Section 1: Area B ASA was poor quality due to
the large flat substrate.



5. Area B 35 m. falls beyond Section 4.



6. Area C Section 1: Rearing coho were utilizing the heavy overhanging riparian vegetation in Sections 1 and 2.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	5.3	15	79.5					
2	100	4.1	30	123					
3	100	7.0	25	175					
4	100	6.4	15	96					
5	100	5.5	10	55					
6	100	4.0	10	40					
7	100	4.1	10	41					
8	100	3.0	15	45					
9	100	5.1	5	25.5					
10	100	4.1	1	4.1					
11	100	3.7	1	3.7					
Total Area "A"				687.8m ²					
1	100	4.7	1	4.7					
2	100	4.0	1	4.0					
3	100	5.7	1	5.7					
4	100	5.7	0	0					
Total Area "B"				14.4m ²					
1	100	2.3	70	161					
2	100	2.5	40	100					
3	100	2.0	20	40					
4	100	1.8	5	9					
Total Area "C"				310m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area A ADF&G No. 101-90-96

1. Section Number	1	2	3	4	5	6	7	8	9	10
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-6	C-6	C-1 C-6	C-6	C-6	C-6	C-1 C-6	C-1 C-6	C-1 C-6
4. Incision Depth (m)	.3	.1	.3	.3	.3	.3	.1	.5	.5	.1
5. Lower Bank Composition										
a. bedrock or boulder	5				5	15	15	15	15	20
b. rubble	30	5	15	20	20	30	25	25	20	20
c. cobble	10	10	15	20	20	15	20	20	20	30
d. decomposed organic mat.										
e. gravel	5	10	10	10	15	10	15	15	20	15
f. sand & silt	50	75	60	50	40	30	25	25	25	15
6. Bed substrate composition										
a. bedrock or boulder	50	25	25	20	30	25	25	30	35	69
b. rubble & cobble	30	50	65	70	55	64	65	65	60	30
c. coarse gravel	10	10	5	5	5	10	10	5	5	1
d. fine gravel & sand	10	15	5	5	10	1				
e. silt-clay deposits										

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area A ADF&G No. 101-90-96

1. Section Number	11									
2. Channel Type										
3. Riparian Vegetation Class	C-1									
4. Incision Depth (m)	.2									
5. Lower Bank Composition										
a. bedrock or boulder	25									
b. rubble	20									
c. cobble	20									
d. decomposed organic mat.										
e. gravel	15									
f. sand & silt	20									
6. Bed substrate composition										
a. bedrock or boulder	79									
b. rubble & cobble	20									
c. coarse gravel	1									
d. fine gravel & sand										
e. silt-clay deposits										

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area B ADF&G No. 101-90-96

1. Section Number	1	2	3	4						
2. Channel Type										
3. Riparian Vegetation Class	C-6	C-6	C-1	C-1						
4. Incision Depth (m)	5	2	1	1						
5. Lower Bank Composition										
a. bedrock or boulder	25	25	25	25						
b. rubble	20	20	20	20						
c. cobble	20	20	20	20						
d. decomposed organic mat.										
e. gravel	15	15	15	15						
f. sand & silt	20	20	20	20						
6. Bed substrate composition										
a. bedrock or boulder	65	70	75	74						
b. rubble & cobble	15	10	10	15						
c. coarse gravel	5	5	5	1						
d. fine gravel & sand	10	15	10	10						
e. silt-clay deposits										

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area C ADF&G No. 101-90-96

1. Section Number	1	2	3	4						
2. Channel Type										
3. Riparian Vegetation Class	C-6	C-1	C-1	C-1						
4. Incision Depth (m)	1	.5	.5	1						
5. Lower Bank Composition										
a. bedrock or boulder	15	20	20	20						
b. rubble	20	20	25	25						
c. cobble	25	20	20	20						
d. decomposed organic mat.										
e. gravel	15	15	15	15						
f. sand & silt	25	25	20	20						
6. Bed substrate composition										
a. bedrock or boulder	10	10	10	10						
b. rubble & cobble	70	70	75	75						
c. coarse gravel	20	20	15	15						
d. fine gravel & sand										
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 101-90-96 Date 7/28/84

1. Reach	1	1	1	1	1	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2.5	2	2	2.5	3	6	5	5	6
5. Water Quality	1	1	1	1	1	1	1	1	1
6. Water Width a. channel	21	13	16.4	11.5	17.5	9.4	7	11.5	11.2
b. water	5.3	4.1	7	6.4	5.5	4	4.1	3	5.1
c. special character	-	1	1	1	-	-	1	-	-
7. Water Type % SS	20	30	30	20	35	20	20	30	30
SF	75	65	60	70	60	75	75	60	65
DS	5	5	10	10	5	5	5	10	5
DF									
8. Undercut Banks (m) left	0	5	10	10	10	5	0	5	0
right	0	5	0	0	0	5	0	5	
9. Debris Cover % small	0	1	0	1	0	3	1	2	3
large	0	5	5	5	0	10	2	13	12
10. Riparian Vegetation %	5	10	10	10	10	15	15	25	20
11. Substrate %:									
a. boulders	25	25	25	20	30	25	25	30	35
b. cobble	30	50	64	69	55	64	65	65	60
c. gravel	15	20	10	10	10	10	10	5	5
d. sand	5	5	1	1	5	1			
e. organic muck									
f. bedrock	25								
g. other									
12. ASA	15	30	25	15	10	10	10	15	5
13. Gravel Shape	1	1	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	40/60	100	100	50/50	100	100	100	100	50/50
b. type	A/B	A	A	A/B	A	A	A	A	A/B
15. Average Depth (cm)	13	12	10	13	13	30	10	10	10
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3/2	3	3/2	3	3	3	3	3	3
b. density	2/3	2	2/3	2	2	2	2	2	2
19. Sampling	-	Y	-	Y	-	-	-	-	-
20. Rearing Area	25	35	30	30	25	20	20	35	30
21. Comments									

Section 1: The ASA substrate is predominately large flat cobble and rather compact.. The rearing area is lacking cover and is not good quality. Bedrock is present along the lower left bank for the first 50 m. of the Section.

Section 2: Braiding within the main channel was present. The rearing habitat improves with the presence of some cover along the banks. Rearing fish are observed.

Section 3: The mainstem contains several good holding pools. A tributary with an estimated flow of .04 m³/sec enters from the left bank. The tributary provides limited ASA for the first 50 m. An exceptional amount of large debris provides excellent rearing habitat for 100 m. The gradient of the tributary increases to 7% and the quality

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3, continued: and quantity of rearing area decreases dramatically.

Section 4: The percentage of large flat cobble in the substrate is increasing.

A deep pool under a log jam at the end of the Section contains rearing fish.

Section 5: A small tributary enters from the left bank. No ASA and minimal rearing habitat is provided. The mainstem cobble substrate is approaching boulder size and the ASA is decreasing. Old logging sign is present. There is little cover provided for the rearing habitat.

Section 6: The stream forks at the start of the Section. The left fork was surveyed as Area B. Evidence of periodic high water discharges is apparent in the wide channel. The stream habitat changes as the gradient and substrate size increase. There is an increase in the amount of debris providing cover for rearing fish.

Section 7: Braiding is present at the end of the Section. The ASA improves with a slight decrease in the substrate size. The right bank steepens.

Section 8: Good rearing habitat is provided by several old logs across the stream. Rearing coho were observed with regularity.

Section 9: Evidence of logging is still observed on the banks. A trickle tributary enters from the left bank. The right bank is unstable and exposed soil is observed in several places.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 101-90-96 Date 7/28/84

1. Reach	3	3							
2. Section	10	11							
3. Section Length (m)	100	100							
4. Gradient	8.5	12							
5. Water Quality	1	1							
6. Water Width a. channel	15	12.3							
b. water	4.1	3.7							
c. special character	-	-							
7. Water Type % SS	25	15							
SF	75	85							
DS									
DF									
8. Undercut Banks (m) left	0	0							
right	0	0							
9. Debris Cover % small	0	2							
large	5	8							
10. Riparian Vegetation %	10	5							
11. Substrate %:									
a. boulders	69	79							
b. cobble	30	20							
c. gravel	1	1							
d. sand									
e. organic muck									
f. bedrock									
g. other									
12. ASA	1	1							
13. Gravel Shape	1	1							
14. Streambank Vegetation									
a. percentage	100	30/70							
b. type	A	A/B							
15. Average Depth (cm)	35	13							
16. Beaver Activity	5	5							
17. Potential Barrier	-	-							
18. Aquatic Vegetation									
a. type	3	3							
b. density	3	3							
19. Sampling	Y	-							
20. Rearing Area	20	15							
21. Comments									

Section 10: The gradient and substrate size increase while the ASA and rearing habitat decreases. The stream forks and the right fork is surveyed as Area C.
 Section 11: The stream enters a canyon with unstable upper banks. The survey was discontinued at the end of the Section. The gradient increases to over 20% and many bedrock and or debris barriers are present.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B ADF&G No. 101-90-96 Date 7/28/84

1. Reach	1	1	1	1				
2. Section	1	2	3	4				
3. Section Length (m)	100	100	100	100				
4. Gradient	6.5	8	9	10				
5. Water Quality	1	1	1	1				
6. Water Width a. channel	6.2	11.4	11	9.4	18.8			
b. water	4.7	4	5.7	5.7	4.2			
c. special character	1,3	-	-	-				
7. Water Type % SS	15	15	10	10				
SF	85	85	85	90				
DS			5					
DF								
8. Undercut Banks (m) left	0	0	0	0				
right	0	0	0	0				
9. Debris Cover % small	1	3	1	0				
large	5	10	10	10				
10. Riparian Vegetation %	10	10	5	5				
11. Substrate %:								
a. boulders	65	70	75	75				
b. cobble	15	10	10	15				
c. gravel	10	10	10	5				
d. sand	10	10	5	5				
e. organic muck								
f. bedrock								
g. other								
12. ASA	1	1	1	0				
13. Gravel Shape	1	1	1	1				
14. Streambank Vegetation								
a. percentage	100	100	100	100				
b. type	A	A	B	B				
15. Average Depth (cm)	11	7	10	10	22			
16. Beaver Activity	5	5	5	5				
17. Potential Barrier	-	-	-	-				
18. Aquatic Vegetation								
a. type	3	3	3	3				
b. density	2	2	2	2				
19. Sampling	-	-	-	-				
20. Rearing Area	15	15	15	10				
21. Comments								

Section 1: Braiding and high water channels are present. The ASA is poor quality due to the large size and compactness of the substrate.
 Section 2: A large log jam is present, but high water channels are present to the left. Few rearing fish are observed.
 Section 3: The upper banks begin to get steep. The left bank appears to be unstable.
 Section 4: Several debris falls that are probable barriers are present. The survey is discontinued at the end of the Section. A barrier falls about 30 m. in height is present 70 m. beyond the end of the survey.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area C ADF&G No. 101-90-96 Date 7/28/84

1. Reach	1	1	2	2					
2. Section	1	2	3	4					
3. Section Length (m)	100	100	100	100					
4. Gradient	5	6	8	10					
5. Water Quality	1	1	1	1					
6. Water Width a. channel	7.3	7.6	6.6	3.9	3.3				
b. water	2.3	2.5	2	1.8	2				
c. special character	1	-	-	-					
7. Water Type % SS	25	25	20	15					
SF	75	75	80	85					
DS									
DF									
8. Undercut Banks (m) left	5	0	5	0					
right	5	0	5	0					
9. Debris Cover % small	10	10	10	10					
large	30	25	30	20					
10. Riparian Vegetation %	75	75	65	50					
11. Substrate %:									
a. boulders	10	10	10	10					
b. cobble	70	70	70	75					
c. gravel	20	20	20	15					
d. sand									
e. organic muck									
f. bedrock									
g. other									
12. ASA	70	40	20	5					
13. Gravel Shape	1	1	1	1					
14. Streambank Vegetation									
a. percentage	100	50/50	100	100					
b. type	A	A/B	B	B					
15. Average Depth (cm)	5	5	5	7					
16. Beaver Activity	5	5	5	5					
17. Potential Barrier	-	-	3	3					
18. Aquatic Vegetation									
a. type	3	3/1	3	3					
b. density	2	2/3	2	2					
19. Sampling	-	-	-	-					
20. Rearing Area	25	25	20	15					
21. Comments									

Section 1: The flow is estimated to be .09 m³/sec. The fork immediately begins to braid through a very brushy area. Flooding appears to be a common occurrence. Good quality ASA and rearing habitat is available. More ASA would be available with a higher water flow. Rearing coho were abundant through Section 2.
 Section 2: Heavy devil's club and stink current riparian vegetation continues through the area surveyed.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: There is a marked decrease in the number of rearing fish observed. Many partial debris barriers or obstacles to fish passage are present. The quality of the ASA decreases due to the increasing size of the substrate. The banks and channel show evidence of very high water discharges. The right bank contains exposed soil in several places and is unstable. The upper right bank is steep and unstable. The survey is discontinued at the end of the Section. The stream has entered a V-notch and the gradient has increased. There are still small patches of ASA, but many potential debris barriers are present. Rearing trout were infrequently observed.

FISH SAMPLING FORM

ADF&G No. 101-90-96 Date 7/28/84 Stream Name

Survey Area A H₂O Temp. 11.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0850	1430	DV-75,80,75 SS-50,62,50,50 45,45,45 mm	Section 2
2	0930	1350	ST -120 CT -120 DV - 88 SS -88,88,88, 100, 100,63	Section 4
3	1045	1245	Ø	Section 10

PEAK ESCAPEMENT RECORD

-663-

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-5 2. Historical Fish ps

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-97

3. USGS Map No. Ketchikan D-6 4. Legal Location 89E.T70S.S-29

5. Latitude and Longitude 55°46'10", 131°47'50" 6. Agency Unit 05

7. Aerial Photo No. 0034,1473,14,9-12-73,02190 8. MGMT Area K29-723

9. Estimated Flow .3 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical logging

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature _____

15. pH _____ 16. Intertidal Zone a. Gradient 3.5

b. Bottom type 1. fines 1 2. gravel/small cobble 20

3. large cobble/boulders/bedrock 79

c. ASA poor - the substrate is large flat boulders and cobble

d. Schooling only in bay

e. Shellfish potential no evidence observed

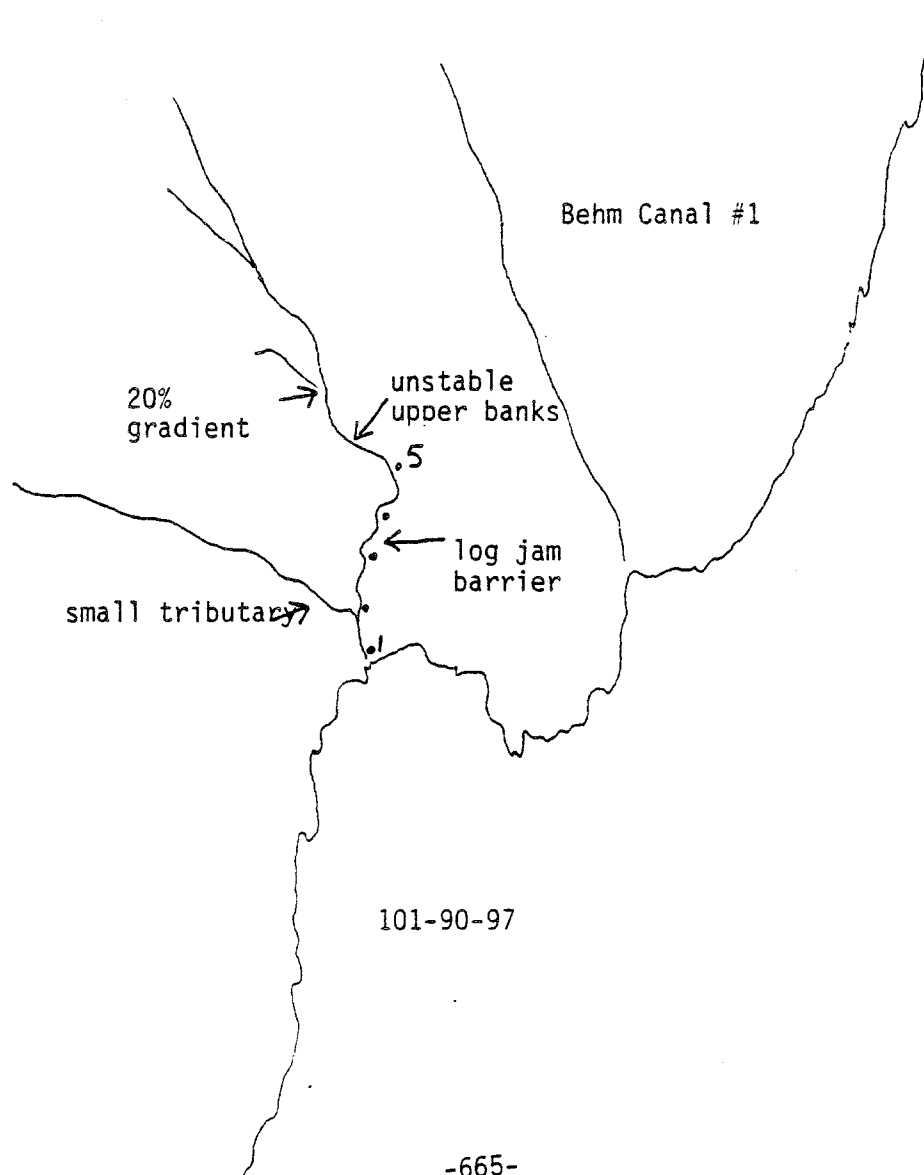
f. Anchorage poor - unprotected

17. Comments

101-90-97 is limited by a lack of ASA. The substrate is predominately large flat cobble and boulders. The best stretch of ASA is found above a probable barrier debris dam in Section 3. The fisheries habitat quickly deteriorates in Section 4, however. A heavy debris load provides good rearing habitat below the log jam barrier in Section 3. Rearing coho were both observed and captured in the stream below the log jam. The gradient increases to over 20% 150 m. beyond the end of Section 5.

18. Investigators Burns/Cariello 19. Weather 3

20. Date 7/27/84 -664- 21. Time 1130-1315



101-90-97



1. ITZ



2. Section #2



3. Section #5 End of survey. Steep gradient with a high proportion of boulder.

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the original.

Mary Lou Barry,
archivist

5/21/02

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	5.5	5	27.5					
2	100	4.8	1	4.8					
3	100	4.0	15	60					
4	100	3.0	5	15					
5	100	5.6	1	5.6					
Total	ASA			112.9m ²					
Available	ASA below barrier			32.3m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-97

1. Section Number	1	2	3	4	5					
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-5,1	C-1,5	C-1	C-5					
4. Incision Depth (m)	.5	.5	.5	.5	.5					
5. Lower Bank Composition										
a. bedrock or boulder	30	68	100	69	69					
b. rubble	30	30		30	20					
c. cobble	30	1		1	10					
d. decomposed organic mat.										
e. gravel	10	1			1					
f. sand & silt										
6. Bed substrate composition										
a. bedrock or boulder	50	55	45	45	60					
b. rubble & cobble	35	30	25	30	25					
c. coarse gravel	10	10	20	15	10					
d. fine gravel & sand	5	5	10	10	5					
e. silt-clay deposits										

7. Comments

Section 2: Left upper bank C-5, 100% gradient with many pioneer species
 Section 3: Left bank C-5, steep
 Section 4: Young hemlock and pioneer species prevalent on right bank.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-97 Date 7/27/84

1. Reach	1	1	1	1	2				
2. Section	1	2	3	4	5				
3. Section Length (m)	100	100	100	100	100				
4. Gradient	4.5	4	5	4	7				
5. Water Quality	1	1	1	1	1				
6. Water Width a. channel	18	9	15	16	10				
b. water	5.5	4.8	4	3	5.6				
c. special character	-	-	1	1	-				
7. Water Type % SS	25	30	25	25	20				
SF	70	65	75	75	80				
DS	5	5							
DF									
8. Undercut Banks (m) left	0	5	0	0	0				
right	1	1	0	0	0				
9. Debris Cover % small	5	1	5	1	1				
large	20	10	20	5	2				
10. Riparian Vegetation %	20	5	1	5	1				
11. Substrate %:									
a. boulders	50	55	35	45	50				
b. cobble	35	30	25	30	25				
c. gravel	15	14	25	20	15				
d. sand		1	5	5					
e. organic muck									
f. bedrock			5		10				
g. other									
12. ASA	5	1	15	5	1				
13. Gravel Shape	1	1	1	1	1				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100				
b. type	B	B	B	B	B				
15. Average Depth (cm)	25	30	20	10	30				
16. Beaver Activity	5	5	5	5	5				
17. Potential Barrier	-	-	1	-	-				
18. Aquatic Vegetation									
a. type	3/1,2	3/2/1	3/1,2	3/2	3/2				
b. density	1/3	1/2/3	1/3	1/3	1/3				
19. Sampling	Y	Y	-	-	-				
20. Rearing Area	30	35	35	30	25				
21. Comments									

Section 1: A small trickle tributary with a gradient of 13% enters from the left bank at the start of the Section. The tributaries substrate is long flat cobble and no ASA or rearing is available at the present flow. Evidence of logging is apparent on the upper banks of the mainstem. Rearing trout were observed.

Section 1: A small tributary with a gradient of 17% enters from the left bank near the end of the Section. Little or no ASA and minimal rearing is provided.

A small patch of ASA is present under log jam at the end of the Section 1. Most of the substrate, however, in the stream is long and flat and provides questionable quality ASA.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 2: Small alder is abundant along the stream bank. Several rearing coho were observed. The left upper bank has a gradient of 100% and there are indications of old slides apparent. The right bank gets steep also near the end of the Section.

Section 3: A large log jam near the start of the Section appears to be a total barrier. A large accumulation of gravel, cobble, and sand has collected behind the dam. Only a few trout were observed above the barrier. A stretch of fair ASA is present in a channel behind the log jam.

Section 4: The ASA decreases in quality rapidly.

Section 5: The gradient and substrate size increase dramatically as the stream enters a V-notch. Multiple slides have taken place on the steep upper banks, exposing bedrock.

The survey was discontinued at the end of the Section. The gradient runs between 8.5 and 10% for the next 150 m. before another log jam barrier is present. The stream forks above the second log jam and both forks have barriers within sight. The gradients of both forks increase to over 20%.

FISH SAMPLING FORM

ADF&G No. 101-90-97 Date 7/27/84 Stream Name _____
 Survey Area A H₂O Temp. _____ Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1145	1300	DV - 150mm SS - 90mm	Section 1
2	1150	1255	Ø	Section 2 rearing coho observed.

PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/23/79	200			no fish observed
1980				
2/3/81	1,500			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas _____ 2. Historical Fish _____

Part II.

1. Stream Name Behm Canal #1 2. ADF&G Catalog No. _____

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E, T70S, S-28

5. Latitude and Longitude 55°46'20", 131°47'10" 6. Agency Unit 05

7. Aerial Photo No. 0034, 1473, 14, 9-12-73, 02190 8. MGMT Area K29-723

9. Estimated Flow .18 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical possibly logging

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature _____

15. pH _____ 16. Intertidal Zone a. Gradient 2
high tide

b. Bottom type 1. fines 5 2. gravel/small cobble 30

3. large cobble/boulders/bedrock 65

c. ASA small patch of fair quality ASA

d. Schooling unable to determine due to tide stage

e. Shellfish potential no evidence observed

f. Anchorage poor - unprotected

17. Comments

A small patch of ASA was available at the head of the ITZ. Four rearing coho were observed in the ITZ.

Behm Canal #1 is limited by its large, flat boulder substrate. Only traces of ASA are present below a 3.5 m. barrier falls 175 m. from the ITZ. Rearing coho were observed in the ITZ. The gradient is 12%.

Boulders and blowdown provide cover for adequate rearing habitat, but no rearing fish were observed or captured above the ITZ. The upper banks are steep and appear unstable.

18. Investigators Burns/Cariello -675- _____ 19. Weather 3

20. Date 7/24/84 21. Time 1415-1445

101-90-97

steep
unstable banks
rearing
coho

3.5 m. falls

BEHM CANAL #1

Behm Canal #1



1. ITZ



2. 175 m. upstream looking at 3.5 m falls.

Behm Canal #1



3. 50 m. above the falls.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/27/84 Stream Name Behm Canal #1
 Survey Area _____ H₂O Temp. _____ Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1305	1325	Ø	ITZ rearing coho observed
2	1310	1330	Ø	30 m. above ITZ

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-7 2. Historical Fish PS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-90-99

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E,T70s,S-16

5. Latitude and Longitude 55°48'25",131°46'20" 6. Agency Unit 05

7. Aerial Photo No. 0034,1473,16,9-12-73,02190. 8. MGMT Area K29-723

9. Estimated Flow .25 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical logging

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature 12

15. pH 6 16. Intertidal Zone a. Gradient 4

b. Bottom type 1. fines 10 2. gravel/small cobble 20

3. large cobble/boulders/bedrock 70

c. ASA poor - the substrate is compact and covered with filamentous algae

d. Schooling only in small bay

e. Shellfish potential no evidence observed

f. Anchorage good for small skiff at mouth

17. Comments

101-90-99 is limited by a lack of ASA and rearing habitat. Small amounts of ASA are available up through Section 5. The gradient increases substantially beyond Section 5 and the substrate becomes predominately boulders. Several possible debris barriers are present in Section 6 and 7. The best rearing area is in Sections 1 and 2. Rearing trout were observed infrequently above Section 4.

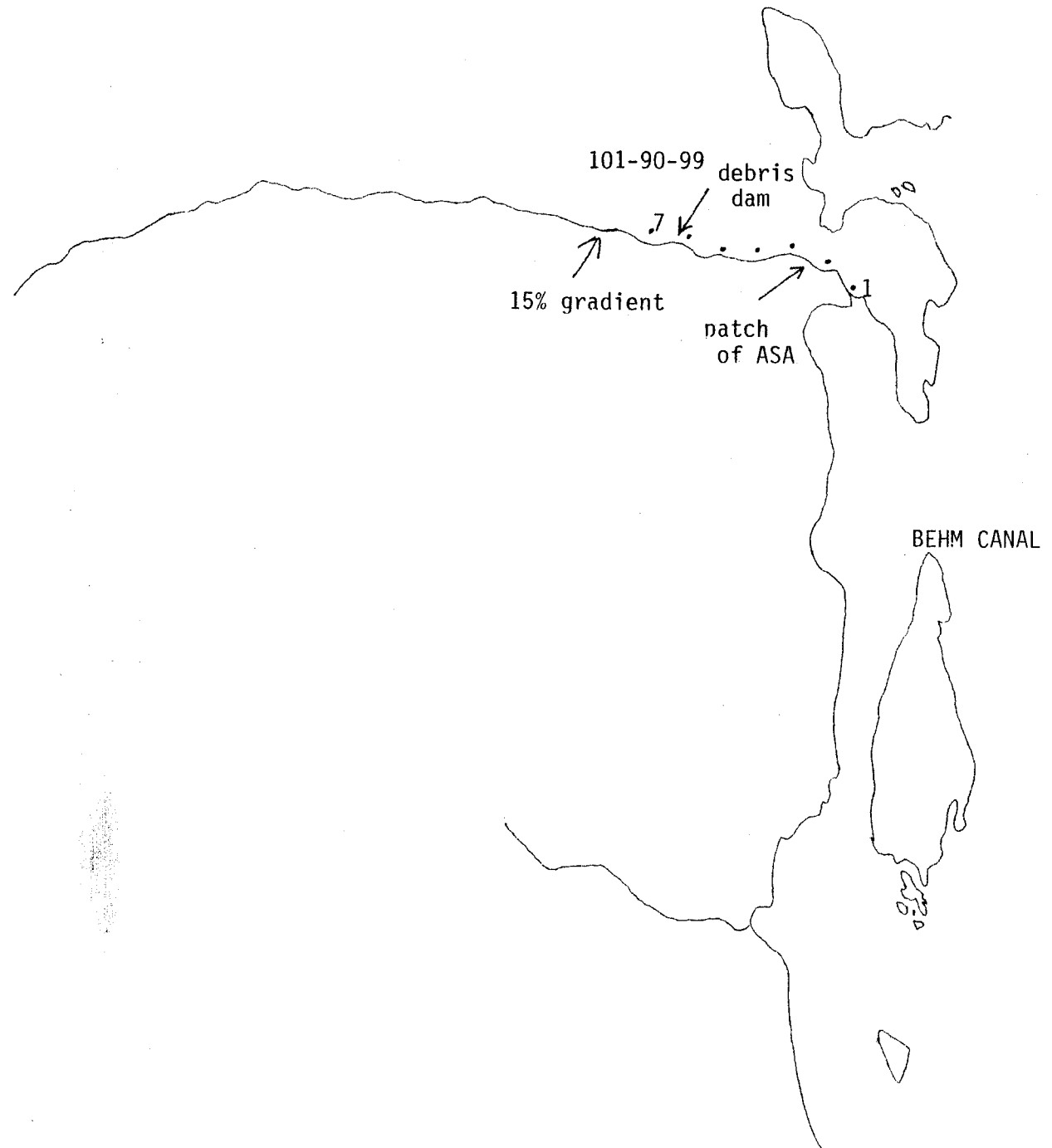
18. Investigators Burns/Cariello 19. Weather 3

20. Date 7/27/84

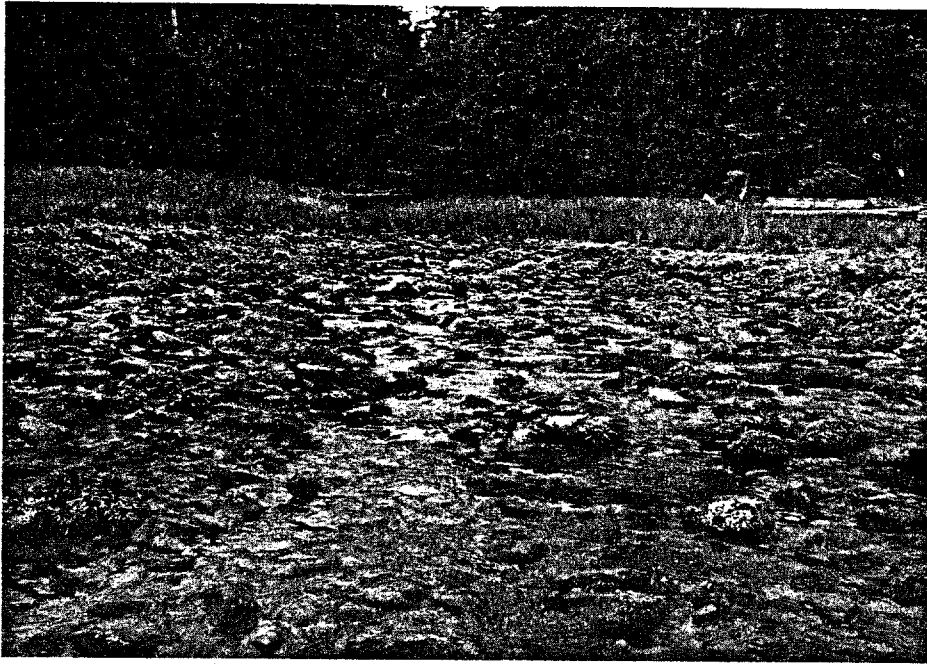
-680-

21. Time 0830-1110

AN



101-90-99



1. Upper ITZ



2. Section #3

101-90-99



3. Section #7 Debris jam with small falls.

101-90-99

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	4.6	1	4.6					
2	100	2.0	10	20					
3	100	4.0	5	20					
4	100	2.5	0	0					
5	100	2.0	5	10					
6	100	2.0	5	10					
7	100	4.0	0	0					
Total				54.6m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-90-99

1. Section Number	1	2	3	4	5	6	7			
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-1	C-1	C-1	C-5	C-5	C-5			
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5			
5. Lower Bank Composition										
a. bedrock or boulder	30	100	77	59	58	70	80			
b. rubble	20		20	30	30	20	20			
c. cobble	15		1	10	10	10				
d. decomposed organic mat.										
e. gravel	15		1	1	1					
f. sand & silt	20		1		1					
6. Bed substrate composition										
a. bedrock or boulder	50	40	50	60	55	65	65			
b. rubble & cobble	30	25	25	20	20	20	20			
c. coarse gravel	10	20	15	15	20	10	10			
d. fine gravel & sand	10	15	10	5	5	5	5			
e. silt-clay deposits										

7. Comments

Section 1: Evidence of old logging. Even-aged hemlock up to 50 ft high with a few big spruce makeup the dominant riparian canopy.
Section 5: Trees smaller - some cedar present.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-90-99 Date 7/27/84

1. Reach	1	1	2	2	3	3	3		
2. Section	1	2	3	4	5	6	7		
3. Section Length (m)	100	100	100	100	100	100	100		
4. Gradient	7	4.5	2	5	7.5	10	10		
5. Water Quality	1	1	1	1	1	1	1		
6. Water Width a. channel	7.8	8	8	7.2	10	10	11		
b. water	4.6	2	4	2.5	2	3	4		
c. special character	-	1	-	-	-	-	-		
7. Water Type % SS	30	30	15	3-	25	25	20		
SF	65	65	80	69	74	74	79		
DS	5	5	5	1	1	1	1		
DF									
8. Undercut Banks (m) left	0	5	0	0	0	1	0		
right	5	0	1	5	1	1	0		
9. Debris Cover % small	2	3	1	2	1	3	5		
large	10	10	1	5	3	5	15		
10. Riparian Vegetation %	10	20	1	5	10	20	15		
11. Substrate %:									
a. boulders	50	40	50	60	50	65	65		
b. cobble	30	25	25	20	20	20	20		
c. gravel	15	25	20	20	24	14	15		
d. sand	5	10	5		1	1			
e. organic muck									
f. bedrock					5				
g. other									
12. ASA	1	10	5	0	5	0	0		
13. Gravel Shape	2	2	2	2	2	2	2		
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100		
b. type	B	B	B	B	B	B	B		
15. Average Depth (cm)	15	30	10	10	10	10	10		
16. Beaver Activity	7	5	5	5	5	5	5		
17. Potential Barrier	-	-	-	-	-	3	3		
18. Aquatic Vegetation									
a. type	3/2,1	3/1	3/1,2	3/1,2	3/1	3/1,2	3/1,2		
b. density	1/3	1/2	1/3	1/3	1/2	1/3	1/3		
19. Sampling	Y	-	-	-	-	-	Y		
20. Rearing Area	30	40	25	30	25	25	20		
21. Comments									

Section 1: Evidence of old logging was observed. The predominant canopy is even aged hemlock and a few large spruce. The gradient increases from 4 to 10% through the Section. There is little ASA, but rearing trout were observed.

Section 2: Both upper banks get steep during the Section. A dry high water channel filled with boulders runs to the left. The lower stretch at the Section contains some good ASA with a substrate of coarse gravel and small cobble mixed with sand.

Section 3: There is a lack of large debris in Sections 3 and 4 and contributes to poor rearing habitat. The ASA decreases also as more boulders are present in the substrate.

Section 4: Rearing trout are infrequently observed.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM,continued

Section 5: The gradient increases although there is a stretch of good gravel.

Section 6: A large debris dam forms a probable barrier to upstream migration at the present flow. The stream splits into two channels the last 30 m. of the Section. The substrate is predominately boulders and the fish habitat is quite poor.

Section 7: There were indications of high water discharges present. There are many young alders growing along the stream and there are large cut banks. Another potential debris barrier is present. The survey is discontinued at the end of the Section. The gradient increases to 15% and debris barriers are visible upstream. The stream consists of boulder rapids and plunge pools.

FISH SAMPLING FORM

ADF&G No. 101-90-99 Date 7/27/84 Stream Name

Survey Area A H₂O Temp. 12⁰C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0900	1041	Ø	Section 1
2	1000	1025	Ø	Section 7

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas _____ 2. Historical Fish _____

Part II.

1. Stream Name Spacious Bay #1 2. ADF&G Catalog No. _____

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E,T70S,S-9

5. Latitude and Longitude 55°49'05", 131°46'40" 6. Agency Unit 05

7. Aerial Photo No. 0034,1473,17,9-12-73,02190 8. MGMT Area K29-722

9. Estimated Flow .3 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 11°C

15. pH 4.5 16. Intertidal Zone a. Gradient 12

b. Bottom type 1. fines 5 2. gravel/small cobble 5

3. large cobble/boulders/bedrock 90

c. ASA poor

d. Schooling in small cove only

e. Shellfish potential no evidence of shellfish

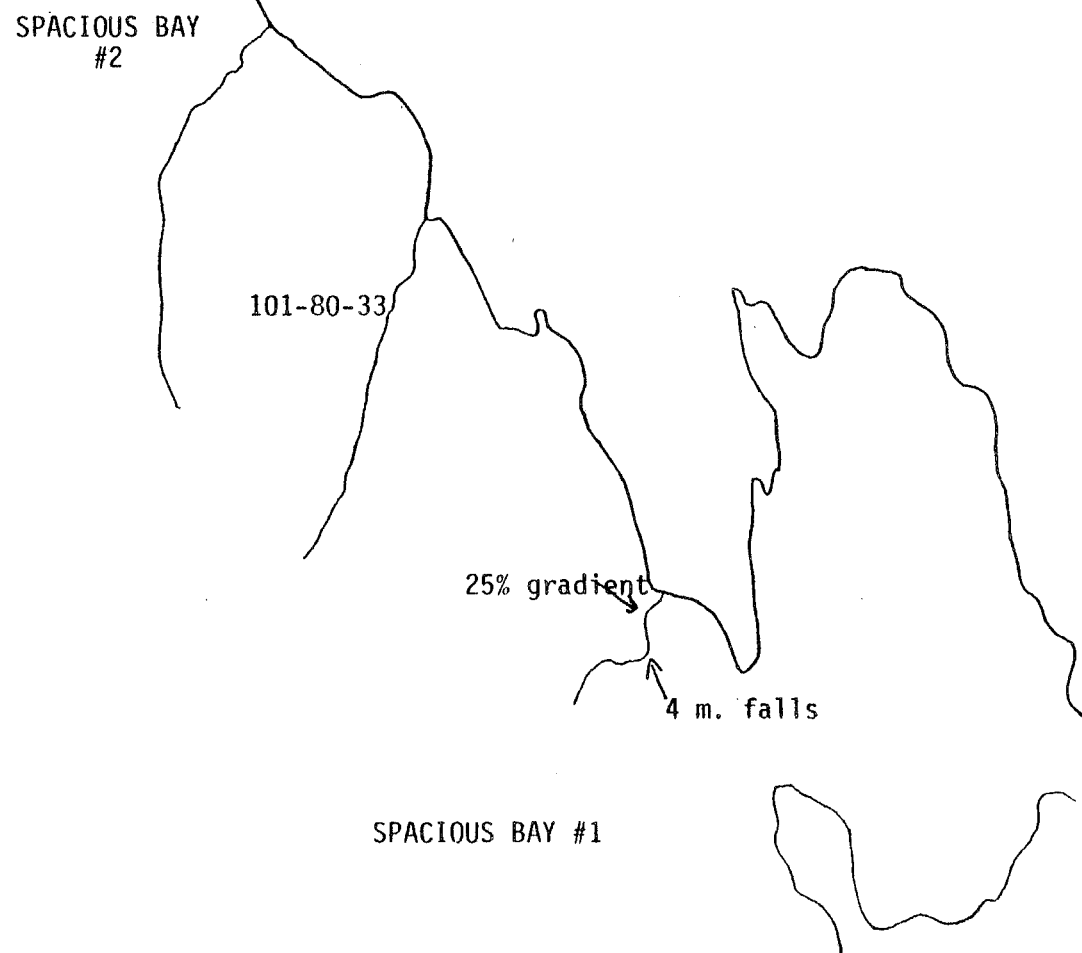
f. Anchorage good for skiff at mouth

17. Comments

Spacious Bay #1 is limited by its steep gradient. A definite 4 m. barrier falls is present 150 m. from the beach. The substrate is primarily boulders and there is little ASA. There is little rearing habitat due to the lack of any cover and the velocity of the water. No rearing fish were observed or captured. The 25% gradient decreases to 10% above the falls, but there is little improvement in fisheries habitat.

18. Investigators Burns/Cariello 19. Weather 3

20. Date 7/10/84 -689- 21. Time 0900-1000



A hand-drawn map of a river system. The river starts at the top left and flows generally downwards and to the right. It has several bends and tributaries. A north arrow is located at the top center, pointing upwards. The river is labeled with 'SPACIOUS BAY #2' at the top left, '101-80-33' in the middle, '25% gradient' with an arrow pointing to a section of the river, '4 m. falls' with an arrow pointing to a small drop in the river, and 'SPACIOUS BAY #1' at the bottom center. The river ends in a large, irregular shape on the right side.

SPACIOUS BAY
#2

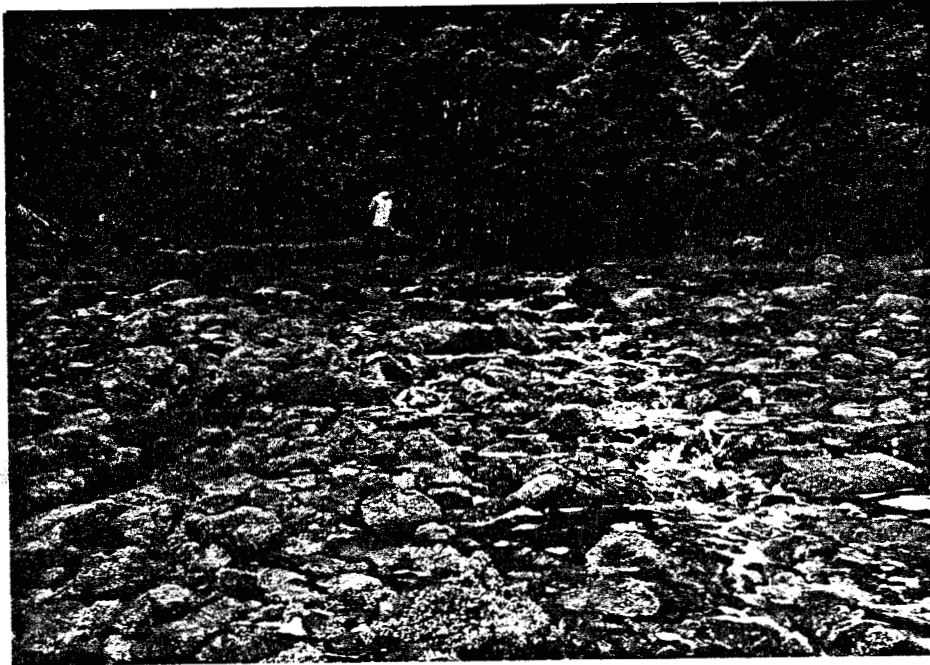
101-80-33

25% gradient

4 m. falls

SPACIOUS BAY #1

Spacious Bay #1



1. ITZ



2. Typical poor habitat found below barrier falls.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/10/84 Stream Name Spacious Bay #1
 Survey Area _____ H₂O Temp. 11.0°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0925	0940	Ø	Set above the falls

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-4 2. Historical Fish PS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-33

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E,T705,S-4

5. Latitude and Longitude 55°49'35", 131°47'10" 6. Agency Unit 05

7. Aerial Photo No. 0034,1473,17,9-12-73,02190 8. MGMT Area K29-722

9. Estimated Flow .3 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 10.75°C

15. pH 4.5 16. Intertidal Zone a. Gradient 10

b. Bottom type 1. fines 10 2. gravel/small cobble 20

3. large cobble/boulders/bedrock 70

c. ASA poor - substrate very large

d. Schooling in saltwater only

e. Shellfish potential no evidence of shellfish

f. Anchorage fair for small skiff at mouth

17. Comments

101-80-33 is a steep swift stream with little fisheries habitat. There is only a trace of poor quality ASA and minimal rearing habitat. Several potential barriers are present in the first two Sections. The gradient increases to 25% beyond 400 meters. No rearing fish were observed or captured.

18. Investigators Burns/Cariello 19. Weather 3

20. Date 7/10/84 -693- 21. Time 1000-1200

SPACIOUS BAY #2

101-80-33

poor
fish
habitat

25%
gradient

1.

4.

SPACIOUS BAY #1



1. ITZ



2. Section 2: Typical habitat included a steep gradient and large substrate.

101-80-33



3. 80 m. beyond the end of survey in Section 4.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	2	0	0					
2	100	1.5	0	0					
3	100	2	1	2					
4	100	1	0	0					

Total $2m^2$

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-33 Date 7/10/84

1. Reach	1	1	1	1					
2. Section	1	2	3	4					
3. Section Length (m)	100	100	100	100					
4. Gradient	20	15	15	15					
5. Water Quality	4	4	4	4					
6. Water Width a. channel	2	1.5	2	1					
b. water	2	1.5	2	1					
c. special character	-	-	-	-					
7. Water Type % SS									
SF	90	85	85	85					
DS		5	5	5					
DF	10	10	10	10					
8. Undercut Banks (m) left	10	10	10	10					
right	10	10	10	10					
9. Debris Cover % small	0	0	0	5					
large	10	5	10	10					
10. Riparian Vegetation %	40	50	50	80					
11. Substrate %:									
a. boulders	60	50	40	40					
b. cobble	20	15	10	15					
c. gravel	5	5	5	15					
d. sand	5	5	10	10					
e. organic muck									
f. bedrock	10	25	30	30					
g. other									
12. ASA	0	0	1	0					
13. Gravel Shape	2	2	2	2					
14. Streambank Vegetation									
a. percentage	100	100	100	100					
b. type	B	B	B	B					
15. Average Depth (cm)	12	15	12	20					
16. Beaver Activity	5	5	5	5					
17. Potential Barrier	2	1	-	-					
18. Aquatic Vegetation									
a. type	1	1	1	1					
b. density	1	1	1	1					
19. Sampling	-	-	Y	-					
20. Rearing Area	0	0	10	10					
21. Comments									

Section 1: The stream is in flood stage and difficult to survey. Several 1 to 2 m. potential barrier falls are present. The stream is very swift and there is little ASA or rearing area available. The substrate is covered by a dense moss growth.

Section 2: There are several more 1 m. falls and a possible velocity barrier, a 5 m. bedrock chute, in this Section.

Section 3: A small trickle tributary enters from the right bank at the end of the Section. Skunk cabbage is quite thick along the stream bank. Survey discontinued. The substrate becomes primarily boulders and the gradient increases to 25%. No ASA and minimal rearing habitat is available. No rearing fish have been observed.

FISH SAMPLING FORM

ADF&G No. 101-80-33 Date 7/10/84 Stream Name

Survey Area A H₂O Temp. 10.75°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1035	1105	∅	Section #3

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-9 2. Historical Fish

Part II.

1. Stream Name Spacious Bay #2 2. ADF&G Catalog No.

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E,T70S,S-5

5. Latitude and Longitude 55°49'50", 131°146'30" 6. Agency Unit 05

7. Aerial Photo No. 0034,1473,17,9-12-73,02190 8. MGMT Area K29-722

9. Estimated Flow .26 m³/sec 10. Flow Stage 3

11. Land Use. a. present none observed b. Historical none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 11°C

15. pH 4.5 16. Intertidal Zone high tide a. Gradient

b. Bottom type 1. fines 2. gravel/small cobble

3. large cobble/boulders/bedrock

c. ASA

d. Schooling

e. Shellfish potential

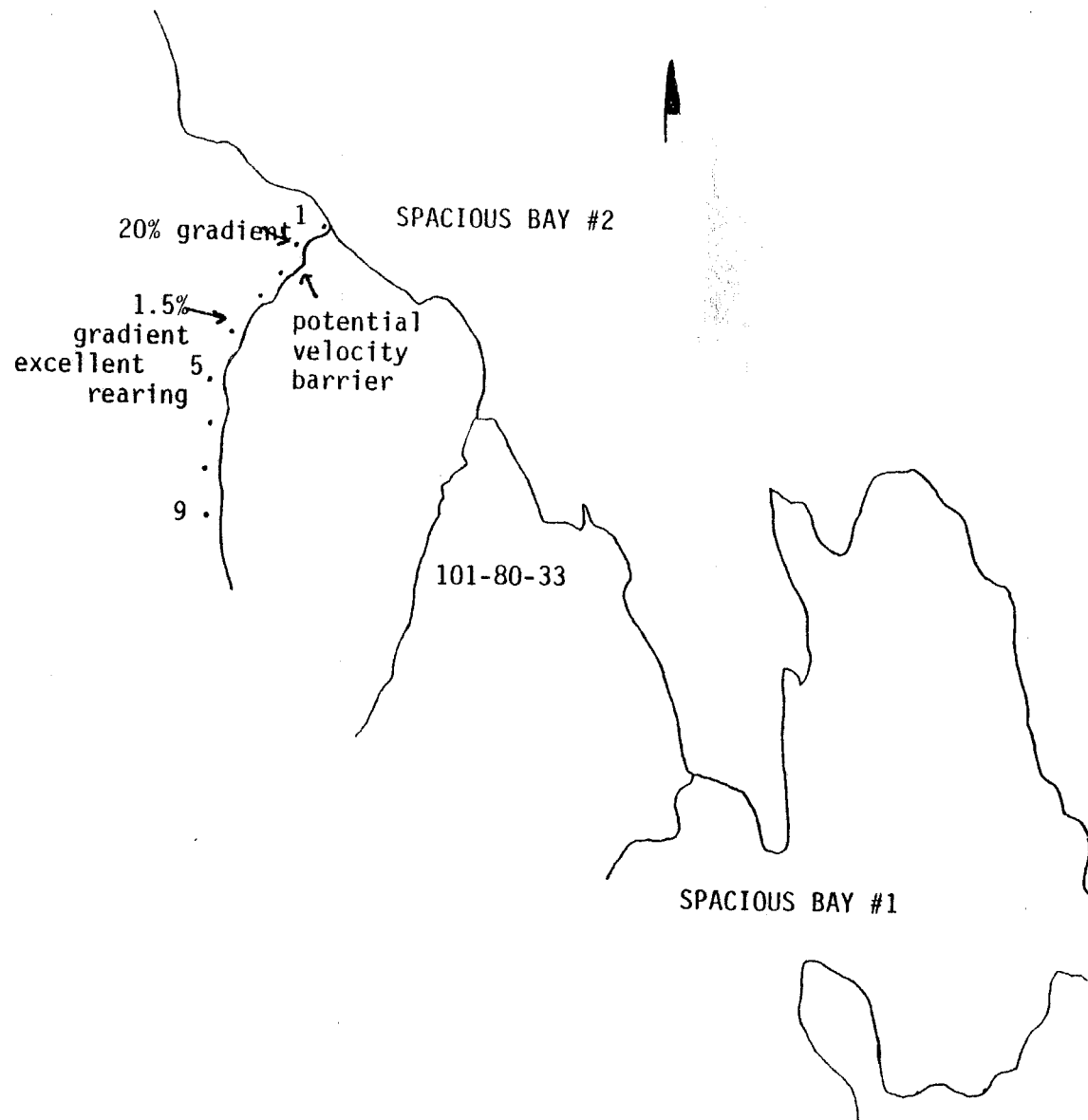
f. Anchorage fair for skiff, but very rocky

17. Comments

The survey was conducted during high tide and the ITZ data was not collected. Spacious Bay #2 contains two very different habitat types. The first reach in Sections 1 and 2 is very steep and contains little fisheries habitat. A falls and velocity chute that are potential barriers are found in this stretch. The gradient is 17 to 20% and the substrate is primarily boulders. The gradient decreases and the stream begins to meander in Section 3. The water depth increases dramatically and excellent rearing habitat is provided. There are substantial undercut banks and an adequate debris load present. No rearing fish were observed or captured. Only patches of ASA are present in the second reach and the substrate is primarily sand.

18. Investigators Burns/Cariello 19. Weather 3

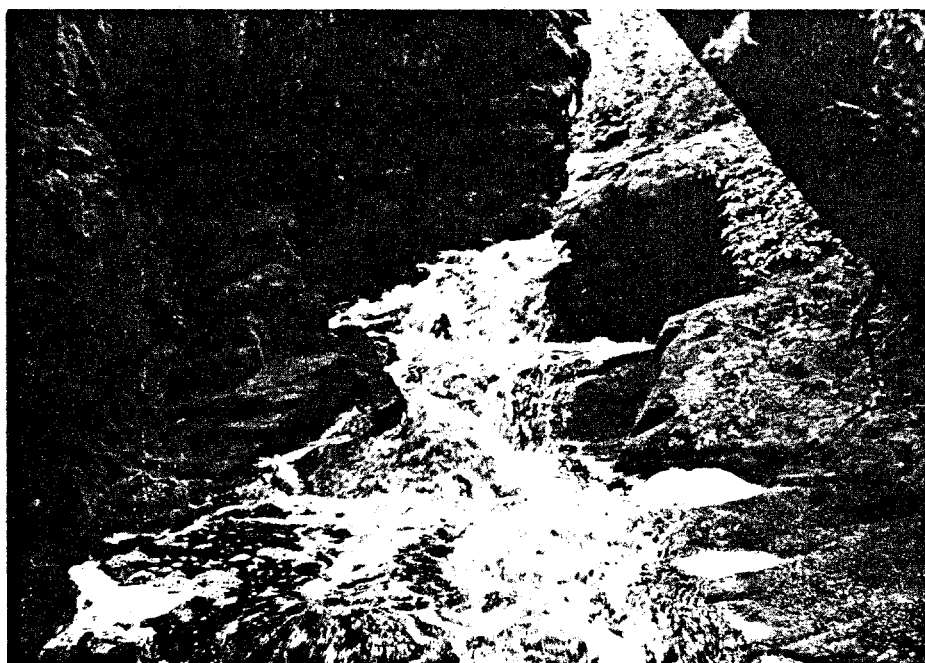
20. Date 7/10/84 21. Time 1200-1410



Spacious Bay #2

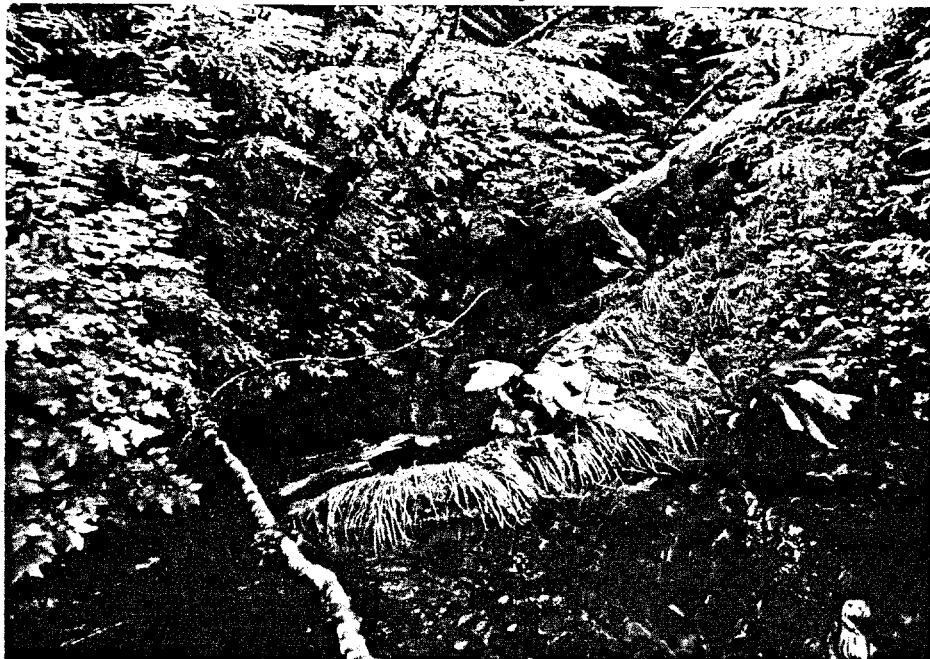


1. Section 1: Typical habitat found in Sections 1 and 2.



2. Possible velocity barrier in Section 2.

Spacious Bay #2



3. Section 5: The gradient decreases and excellent rearing habitat is available in the upper reach.



4. Section 9: Typical habitat at the end of the survey.

Spacious Bay #2

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	6.5	0	0					
2	100	4.0	0	0					
3	100	1.0	1	1					
4	100	3.4	0	0					
5	100	2.6	0	0					
6	100	2.4	1	2.4					
7	100	2.0	0	0					
8	100	2.0	0	0					
9	100	2.0	0	0					
Total				3.4m ²					

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Spacious Bay #2 ADF&G No. _____ Date 7/10/84

1. Reach	1	1	2	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	17	20	3	1.5	1.5	1.5	2.5	3.5	5
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. channel	9.5	4	1	3.4	2.6	2.4	2	2	2
b. water	6.5	4	1	3.4	2.6	2.4	2	2	2
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS			20	30	40	40	35	30	30
SF	85	90	25	5	5	5	15	20	35
DS	5	5	50	65	55	55	40	30	30
DF	10	10	5				10	20	5
8. Undercut Banks (m) left	0	0	50	30	60	60	60	60	50
right	0	0	50	30	60	60	60	60	50
9. Debris Cover % small	0	0	10	10	10	5	5	2	3
large	5	5	15	10	15	5	10	8	10
10. Riparian Vegetation %	25	30	40	40	75	75	75	75	75
11. Substrate %:									
a. boulders	68	50	35						50
b. cobble	20	10	10			5	5	50	45
c. gravel	1		10		5	10	5		T
d. sand	1		35	95	90	85	90	50	5
e. organic muck				5	5				
f. bedrock	10	40	10						
g. other									
12. ASA	0	0	1	0	0	1	0	0	0
13. Gravel Shape	1	1	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	20/80	100	50/50	100
b. type	B	B	B	B	B	B/C	C	B/C	B
15. Average Depth (cm)	12	30	20	50	30	55	10	30	60
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	2	1	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1	1	1,4	1,4	1,4/2	4/2	4/2	4/2	4/2
b. density	1	1	2	2	2/3	2/3	2/3	2/3	1/3
19. Sampling	-	-	Y	-	-	-	-	-	-
20. Rearing Area	5	5	50	90	90	90	80	60	50
21. Comments									

Section 1: The stream is in a high flow stage. The gradient is 17% and a 1 m. falls which could be an obstacle to PS is found in the first Section. The boulder dominated substrate and very swift water produce very poor rearing habitat and a lack of ASA. A tributary from the left bank 30 m. into the Section has the same poor characteristics. Section 2: A possible velocity barrier, a 30 m. bedrock chute with a gradient of 20% is present. Section 3: The stream goes under the bank 65 m. into the Section, and then enters a swamp area and begins to meander. The water is deep and slow, providing good rearing habitat, but no rearing fish are observed.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 4: A small muskeg tributary enters from the right bank. The rearing area lacks good riffles, but has excellent cover. Skunk cabbage and alder predominate along bank.

Section 5: Good undercut banks and riparian vegetation continue to provide excellent rearing habitat.

Section 8: The substrate size and gradient increase, but any ASA still is virtually nonexistent.

Section 9: Stream begins breaking up into small branches. Survey discontinued. Boulders becomes the predominate substrate and the rearing area decreases as the gradient increases.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/10/84 Stream Name Spacious Bay #2
 Survey Area A H₂O Temp. 11.0°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1250	1400	Ø	Set in Section #3

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-12 2. Historical Fish PS, SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-34

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E, T70S, S-5

5. Latitude and Longitude 55°50'15", 131°48'30" 6. Agency Unit 05

7. Aerial Photo No. 0034, 1473, 18, 9-12-73, 02190 8. MGMT Area K29-722

9. Estimated Flow .09 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 12°

15. pH 6 16. Intertidal Zone a. Gradient 2.5

b. Bottom type 1. fines 5 2. gravel/small cobble 50

3. large cobble/boulders/bedrock 45

c. ASA fair

d. Schooling only in salt water

e. Shellfish potential only mussels were observed

f. Anchorage fair for skiff at mouth

17. Comments

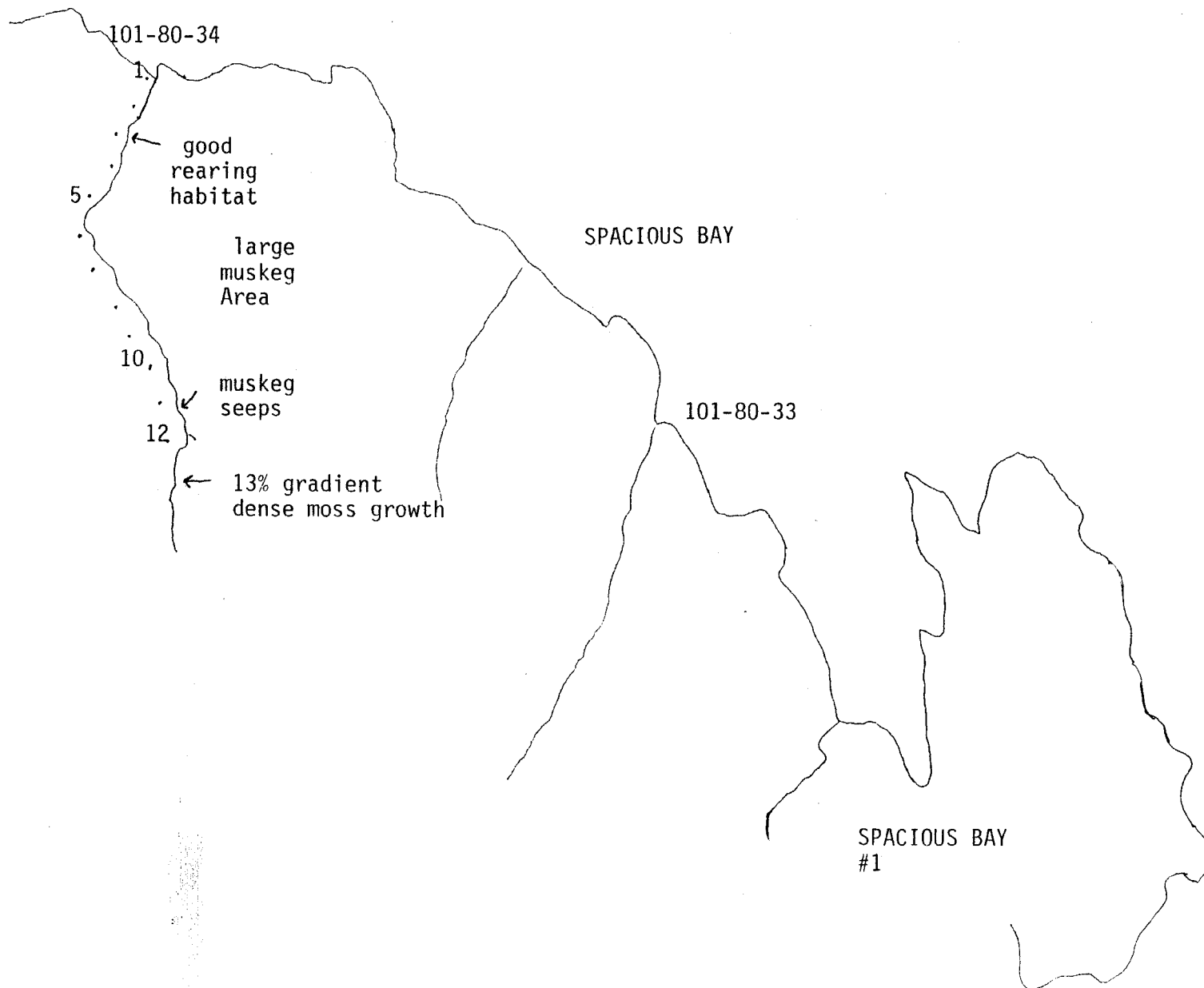
The lower ITZ contained some good ASA, but the upper ITZ had only a small stretch of suitable substrate.

101-80-34 contains small amount of ASA, but good rearing habitat. More ASA would be available with a higher water velocity because the bulk of the stream is shallow slow water type. A moderate to heavy moss growth also lowers the ASA quality. The rearing habitat is excellent quality due to the presence of undercut banks, an adequate debris load, and the large amount of pool area available. Rearing trout were observed frequently and a rearing coho was captured in a minnow trap.

18. Investigators Burns/Cariello 19. Weather 6

20. Date 7/22/84 -708- 21. Time 1400-1800

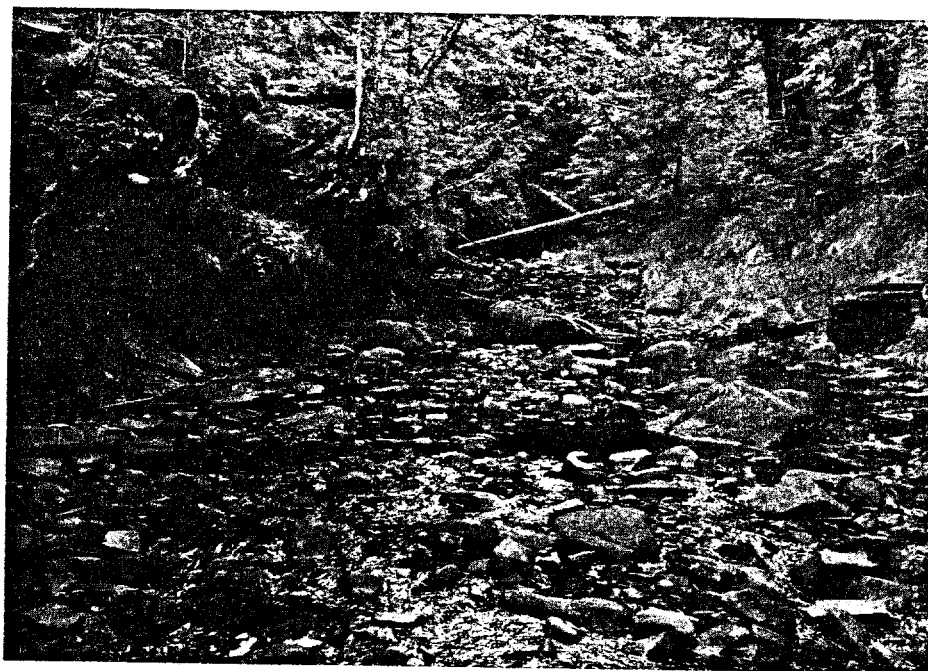
4N



101-80-34



1. ITZ

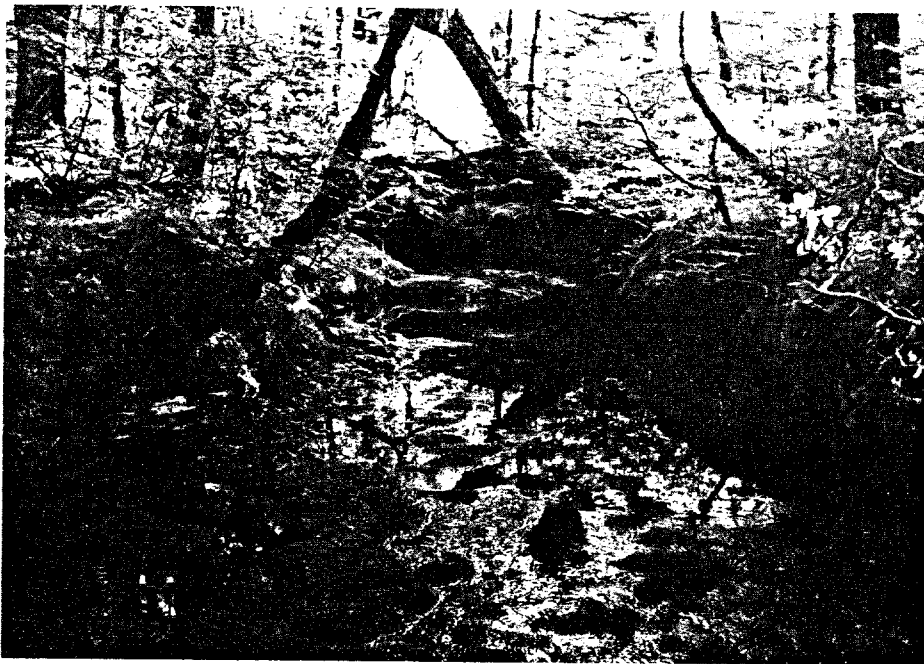


2. Section #1

101-80-34



3. Section #4



4. Section #11

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	5.5	1	5.5					
2	100	1.5	1	1.5					
3	100	1.5	1	1.5					
4	100	1.5	1	1.5					
5	100	2.8	1	2.8					
6	100	2.0	1	2.0					
7	100	2.5	1	2.5					
8	100	3.8	1	3.8					
9	100	1.5	1	1.5					
10	100	1.5	1	1.5					
11	100	3.0	1	3.0					
12	100	2.0	1	2.0					
Total				29.1m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-80-34

1. Section Number	1	2	3	4	5	6	7	8	9	10
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5	C-4	C-4	C-4	C-4	C-4	C-4,5
4. Incision Depth (m)	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5
5. Lower Bank Composition										
a. bedrock or boulder	100	49	30	25	25	10	10	10	5	5
b. rubble		30	30	30	30	10	10	10	5	20
c. cobble		20	29	29	29	5	5	10	20	20
d. decomposed organic mat.										
e. gravel			10	15	15	5	5	10		
f. sand & silt		1	1	1	1	70	70	60	70	55
6. Bed substrate composition										
a. bedrock or boulder	70	35	30	20	10	5	5	5	5	5
b. rubble & cobble	25	40	30	35	40	40	40	35	35	40
c. coarse gravel	3	15	20	25	25	25	25	30	30	30
d. fine gravel & sand	2	10	20	20	25	30	30	30	30	25
e. silt-clay deposits										

7. Comments

Section 1: Bedrock of lower bank fragmented in flat pieces.
Section 3: Cedar becoming dominant conifer in riparian vegetation.
Section 10: C-5 on left bank, C-4 on right.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-80-34

1. Section Number	11	12								
2. Channel Type										
3. Riparian Vegetation Class	C-4	C-5, 4								
4. Incision Depth (m)	1.5	1.5								
5. Lower Bank Composition										
a. bedrock or boulder	5	5								
b. rubble	20	30								
c. cobble	50	50								
d. decomposed organic mat.										
e. - gravel		5								
f. sand & silt	25	15								
6. Bed substrate composition										
a. bedrock or boulder	5	5								
b. rubble & cobble	40	50								
c. coarse gravel	30	25								
d. fine gravel & sand	25	20								
e. silt-clay deposits										

7. Comments

Section 12: Riparian vegetation is C-5 on left bank and C-4 on right bank.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-34 Date 7/22/84

1. Reach	1	2	2	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	7	6.5	2.5	5	3	3.5	3.5	7
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	8.5	3	1.5	2	2.8	2	2.5	3.8	1.5
b. water	5.5	1.5	1.5	1.5	2.8	2	2.5	3.8	1.5
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	50	50	65	65	60	60	65	70	70
SF	50	50	35	30	25	20	20	20	25
DS				5	15	20	15	10	5
DF									
8. Undercut Banks (m) left	1	35	60	60	60	100	80	70	60
right	1	40	60	50	60	100	80	70	60
9. Debris Cover % small	1	2	1	1	1	2	2	2	3
large	1	15	10	5	3	15	15	15	20
10. Riparian Vegetation %	5	15	10	10	10	10	10	10	10
11. Substrate %:									
a. boulders	35	35	30	20	10	5	5	5	5
b. cobble	25	40	30	35	40	40	40	35	35
c. gravel	4	20	30	35	40	40	40	50	50
d. sand	1	5	10	10	10	15	15	10	10
e. organic muck									
f. bedrock	35								
g. other									
12. ASA	1	1	1	1	1	1	1	1	1
13. Gravel Shape	2.3	2.3	3	3	3	3	3	3	3
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	C	C	C	C	C
15. Average Depth (cm)	5	30	20	10	40	50	10	45	8
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
b. density	1	1/2	1/3	1/3	1/3	2/3	2/3	2/3	1/3
19. Sampling	Y	-	-	-	-	-	-	-	-
20. Rearing Area	65	50	60	75	75	80	75	75	75
21. Comments									

Section 1: Filamentous algae growth is heavy for the first 50 meters while moss, including some Fontinalis, is heavy for the last 50 meters. 75 mm trout observed.

Even though the gradient increases, the presence of undercut banks and large debris provides good rearing habitat in this reach. Fontinalis is present again in this Section.

Section 3: A heavy moss growth completely covers all substrate other than the gravel and sand. The stream begins to meander quite severely.

Section 4: There are patches of gravel only, which is limiting the ASA. The habitat may be more suitable to trout.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 5: Muskeg is visible 60 to 80 meters on either side of the stream. The water velocity is too slow at the present flow to provide ASA with the gravel that is available.

Section 6: The moss growth is decreasing in density. A small clump of clay is noticed on the stream bottom.

Section 7: Only rearing trout have been observed, although a coho is captured in a minnow trap. Several large clay patches are observed on cut banks towards the end of the Section.

Section 9: A nearly dry tributary enters from the left bank. The large cobble in the substrate becomes moss covered. Several rearing trout observed and even though the substrate increases, the stream meanders.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-34 Date 7-22-84

1. Reach	2	2	2					
2. Section	10	11	12					
3. Section Length (m)	100	100	100					
4. Gradient	5	3	3					
5. Water Quality	3	3	3					
6. Water Width a. channel	3.5	3	2.5					
b. water	1.5	3	2					
c. special character	-	-	-					
7. Water Type % SS	70	70	70					
SF	25	20	25					
DS	5	10	5					
DF								
8. Undercut Banks (m) left	60	75	60					
right	60	75	60					
9. Debris Cover % small	3	2	2					
large	20	10	15					
10. Riparian Vegetation %	10	15	15					
11. Substrate %:								
a. boulders	5	5	5					
b. cobble	40	40	40					
c. gravel	45	45	45					
d. sand	10	10	10					
e. organic muck								
f. bedrock								
g. other								
12. ASA	T	T	T					
13. Gravel Shape	3	3	3					
14. Streambank Vegetation								
a. percentage	100	100	100					
b. type	C	C	C					
15. Average Depth (cm)	13	15	8					
16. Beaver Activity	5	5	5					
17. Potential Barrier	-	-	-					
18. Aquatic Vegetation								
a. type	1/2	1/2	1/2					
b. density	1/3	1/3	1/3					
19. Sampling	-	-	-					
20. Rearing Area	75	70	70					
21. Comments								

Section 10: Muskeg seep enters from right bank. Extensive meandering to end of Section 11 and 12. Several small muskeg seeps enters from both banks. Survey discontinued after Section 12. Stream continues 200 m. in a similar mode, although shrinking in size. The substrate size is increasing and more overhanging riparian vegetation is present. The substrate is covered with a heavy growth of moss and little, if any ASA is present. Rearing fish were still observed infrequently.

FISH SAMPLING FORM

ADF&G No. 101-80-34 Date 7/22/84 Stream Name _____
 Survey Area A H₂O Temp. 12^oC Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1430	1740	CT -110 125 mm	Section 1
2	1600	1720	CT -75,75,80,65 SS -52 DV -105 mm	Section 7

PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/16/79				aerial intertidal survey only - no fish observed
8/9/82	3,000			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-14 B 1-8 2. Historical Fish PS, SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-36

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E, T69S, S-6

5. Latitude and Longitude 55°50'15", 131°49'15" 6. Agency Unit 05

7. Aerial Photo No. 0033,573,110,8-18-73, 02190 8. MGMT Area K29-723

9. Estimated Flow .5 m³/sec. 10. Flow Stage 2

11. Land Use a. present none observed b. historical logging

12. Temperature Sensitivity and/or origin 5.4

13. Access 2 14. Stream Temperature 11°C

15. pH 6.5 16. Intertidal Zone a. Gradient 2

b. Bottom type 1. fines 5 2. gravel/small cobble 15

3. large cobble/boulders/bedrock 85

c. ASA Fair

d. Schooling only in Spacious Bay

e. Shellfish potential Dungeness crab in bay

f. Anchorage fair for skiff 150 m. east of mouth - unprotected

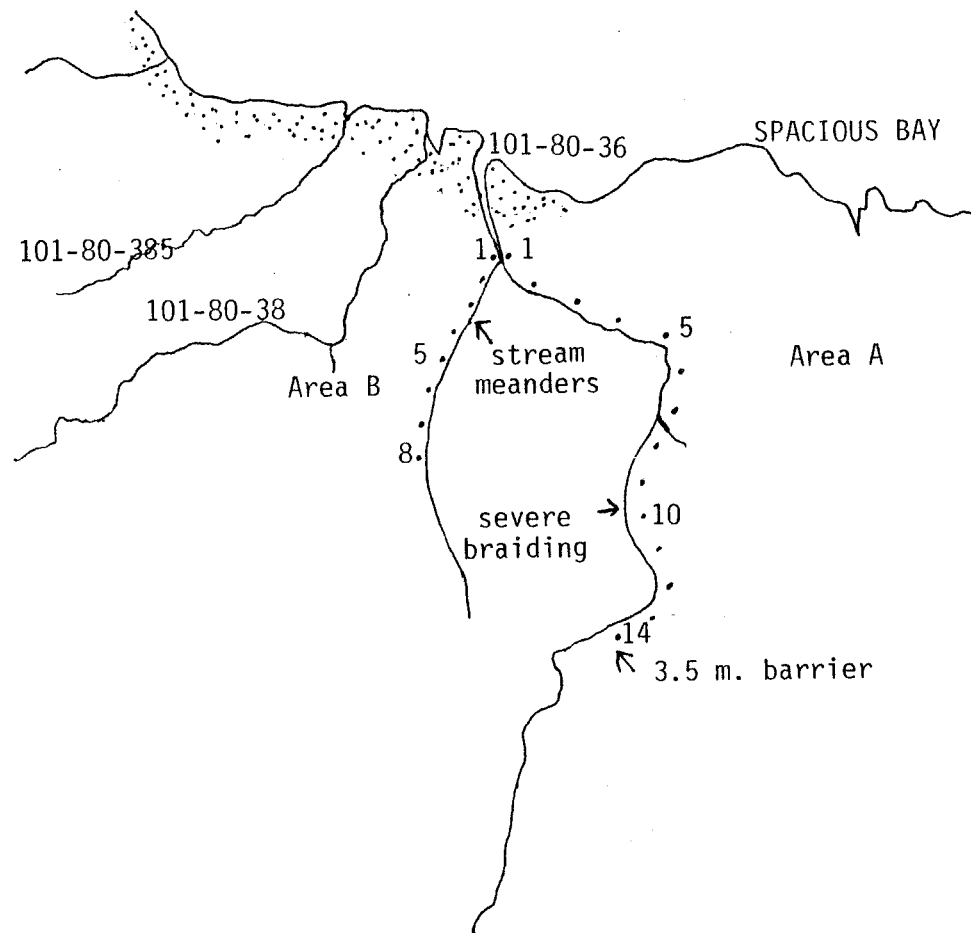
17. Comments

The upper ITZ has about 80 m² of compact ASA. Area B was surveyed on 7/10/84 when the stream was in floodstage.

101-80-36 is limited its lack of good quality ASA and rearing area. Most of the ASA is located above Section 6 of the mainstem. There is a lack of gravel and the substrate is predominately boulders and large cobble. The best quality ASA is found in the braided area starting in Section 7. The best rearing habitat is also found between Sections 7 and 11. Even in this stretch however, the rearing area lacked debris, undercut banks, and overhanging riparian vegetation. A 3.5 m. barrier falls is present in Section 14. Area B is a small stream and contains limited ASA and rearing habitat.

18. Investigators Burns/Cariello 19. Weather 2.1

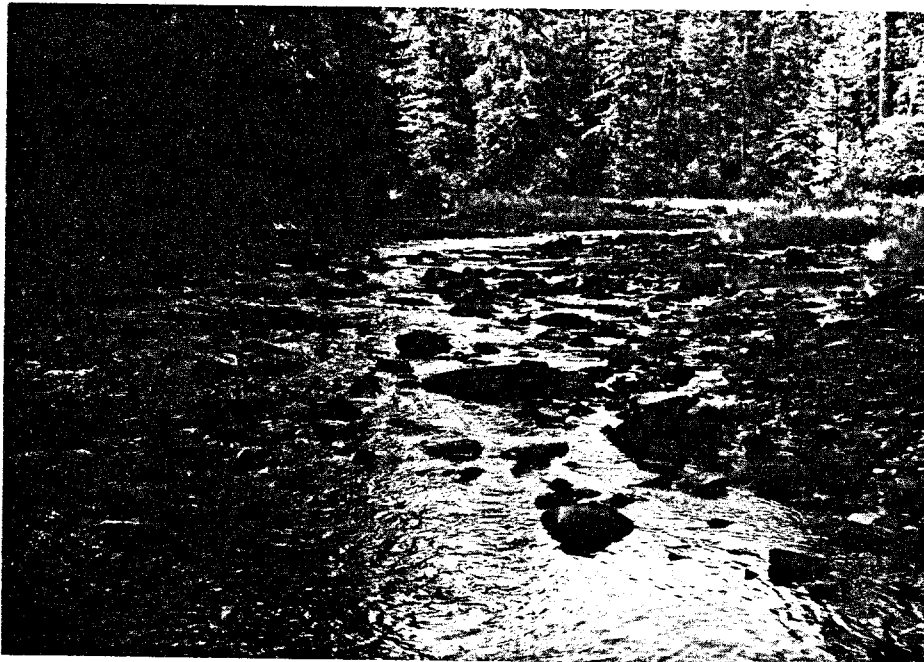
20. Date 7/23/84 7/10/84 -720- 20. Time 0800-1330 1500-1800



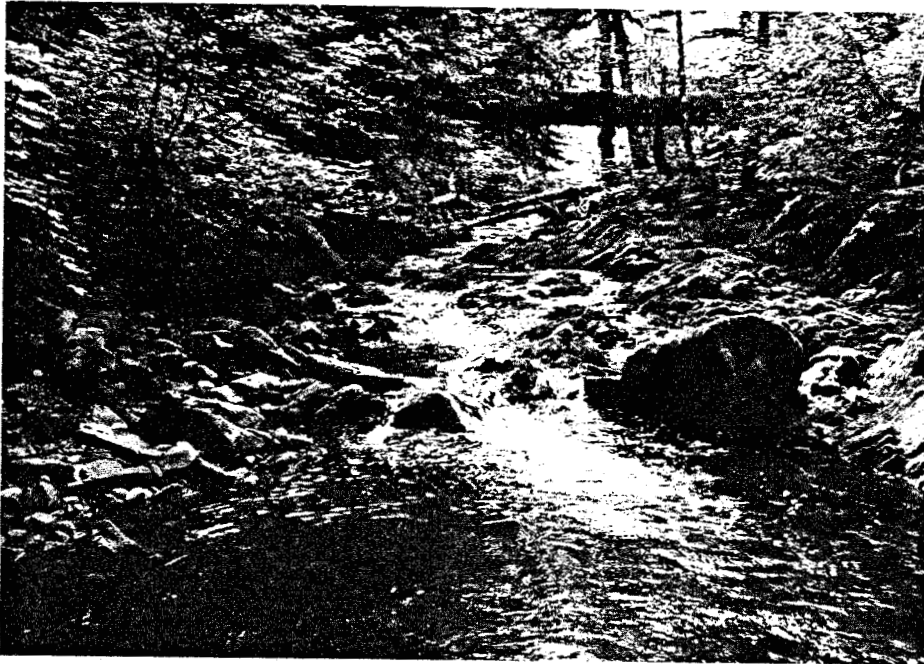
101-80-36



1. ITZ: 7/10/84, high flow



2. Upper ITZ, 7/23/84, low flow



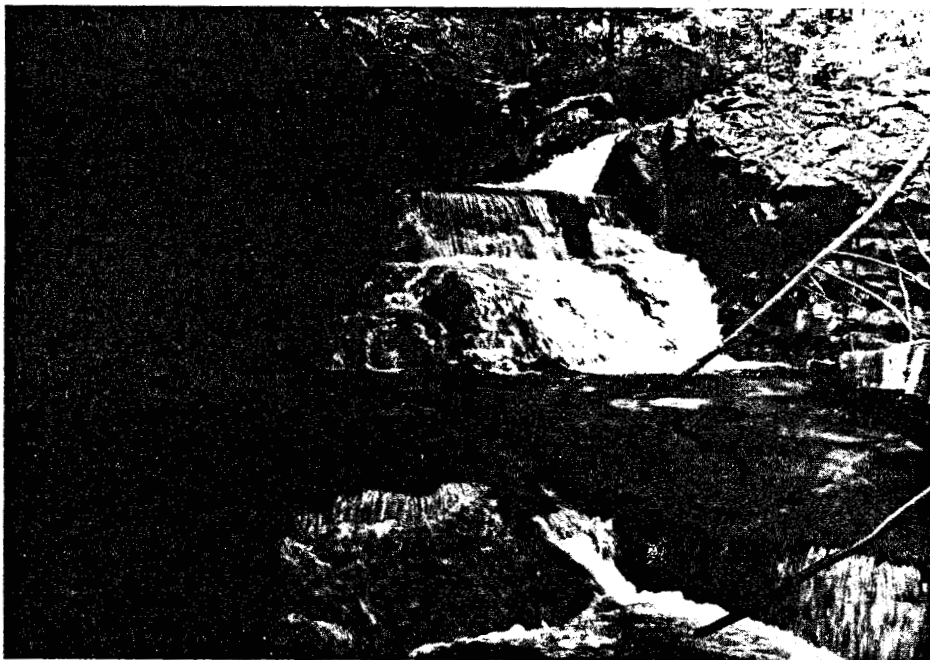
3. Towards the end of Section #3



4. Section #10 Above where braided channels join.



5. Section #12



6. Section #14 of barrier falls.

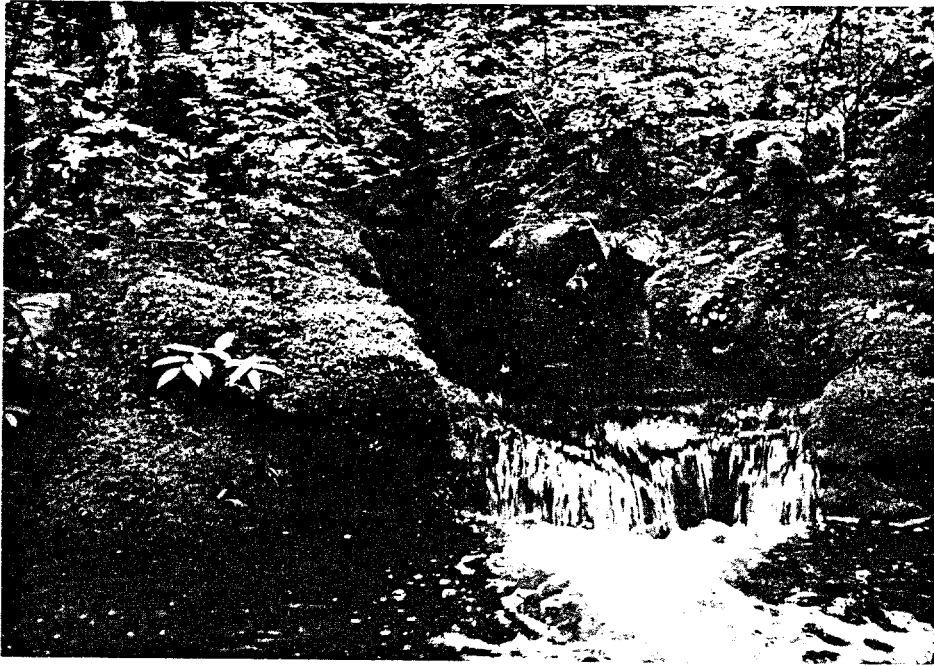


7. Barrier Falls 100 m. past the end of Section #14.



8. Typical habitat above the barriers.

101-80-36 Area A



9. Section 2: Typical habitat found in Area B

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	6.5	10	65	1	100	4.2	1	4.2
2	100	12	1	12	2	100	4.0	10	40
3	100	8.5	0	0	3	100	2.6	1	2.6
4	100	5.7	1	5.7	4	100	3.5	0	0
5	100	4.0	5	20	5	100	2.0	0	0
6	100	5.1	1	5.1	6	100	3.0	1	3
7	100	10	1	10	7	100	2.0	0	0
8	100	7	5	35	8	100	2.0	0	0
9	100	5.5	5	27.5	Total Area "B"				51.8m ²
10	100	3.5	5	17.5					
11	100	5.5	0	0					
12	100	11	0	0					
13	100	3	0	0					
14	100	9	0	0					
Total Atea "A"				197.8 m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area A ADF&G No. 101-80-36

1. Section Number	1	2	3	4	5	6	7	8	9	10
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-4	C-5,7	C-5	C-5	C-5	C-5	C-3	C-3	C-3
4. Incision Depth (m)	2	2	1	1	.5	.5	.5	1.0	.5	.5
5. Lower Bank Composition										
a. bedrock or boulder	20	100	100	30	30	30	15	30	25	20
b. rubble	20				20	20	30	30	25	25
c. cobble	20				30	30	30	25	25	20
d. decomposed organic mat.										
e. gravel	20				10	10	15	10	15	20
f. sand & silt	20				10	10	10	5	10	15
6. Bed substrate composition										
a. bedrock or boulder	26	75	70	60	49	55	50	45	45	50
b. rubble & cobble	50	15	20	30	30	25	30	30	30	30
c. coarse gravel	20	5	5	5	15	15	15	20	20	15
d. fine gravel & sand	4	5	5	5	5	5	5	5	5	5
e. silt-clay deposits					1					

7. Comments

Section 3: C-7 left bank, steep with some rock out cropping

Section 5: Some clay in deep pools

Section 6: Incision was .5 along right bank, but left bank was mostly bedrock.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ Area A _____ ADF&G No. 101-80-36 _____

1. Section Number	11	12	13	14						
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-5,1	C-5	C-5						
4. Incision Depth (m)	.5	.5	.5	-						
5. Lower Bank Composition										
a. bedrock or boulder	50	80	100	100						
b. rubble	30	5								
c. cobble	15	5								
d. decomposed organic mat.										
e. gravel	5	5								
f. sand & silt										
6. Bed substrate composition										
a. bedrock or boulder	60	80	90	95						
b. rubble & cobble	25	15	10	5						
c. coarse gravel	13	4								
d. fine gravel & sand	2	1								
e. silt-clay deposits										

7. Comments

Section 12: C-1 left bank

Section 14: left upper bank conifers are predominately cedar - muskeg near by bedrock walls on both sides.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 101-80-36 Date 7/23/84

1. Reach	1	2	2	2	3	3	3	4	4
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	4	2	2.5	2.5	4	3	3	3.5
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	15	14	9.5	8.7	15	7.1	11	8	8
b. water	6.5	12	8.5	5.7	4	5.1	10	7	5.5
c. special character	2	-	-	-	1	-	1	1	1
7. Water Type % SS	15	10	15	20	15	20	20	25	30
SF	84	85	84	80	80	80	80	75	70
DS	1	5	1		5				
DF									
8. Undercut Banks (m) left	0	0	0	0	0	0	0	0	0
right	5	0	0	0	0	0	0	0	0
9. Debris Cover % small	0	0	0	1	1	0	0	0	0
large	0	1	2	1	5	1	1	0	1
10. Riparian Vegetation %	1	5	1	1	1	1	1	5	1
11. Substrate %:									
a. boulders	25	15	20	40	40	35	35	45	45
b. cobble	50	15	20	30	30	25	30	30	30
c. gravel	23	10	10	10	20	20	20	25	25
d. sand	1								
e. organic muck									
f. bedrock	1	60	50	20	10	20	15		
g. other									
12. ASA	10	1	0	1	5	1	1	5	5
13. Gravel Shape	3	2,3	2,3	2,3	2,3	1-3	1-3	2,3	2,3
14. Streambank Vegetation									
a. percentage	50/50	100	100	100	100	100	100	100	100
b. type	A/B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	18	50	48	25	38	50	10	25	
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3/2	3/2	3/2	3/2	3/1	3/1	3/1	3/1	3/1
b. density	1/2	1/3	1/3	1/3	1/3	1/2	2/2	2/2	2/2
19. Sampling	-	-	Y	-	-	-	-	-	-
20. Rearing Area	20	20	20	20	25	20	20	30	25
21. Comments									

Section 1: The rearing habitat is lacking in quality due to the absence of undercut banks, debris and overhanging vegetation. The large, rather compact substrate results in only fair ASA.

Section 2: Bedrock becomes prevalent in the substrate and upper and lower banks. Very poor ASA results.

Section 3: -The left upper bank has an 80% slope with evidence of old logging present.

Section 5: The upper banks flatten out at the end of Section 4. Bedrock becomes less common in bottom substrate. The presence of large debris in this Section provides some excellent rearing habitat. Many large rearing trout observed in deep pool. A patch of

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 5, continued: blue clay is observed in mainstem. Scars on alder along the left bank most likely resulted from icing or high water discharges. A small muskeg seep enters from the left bank.

Section 6: The right bank is predominately bedrock.

Section 7: PS fish bones were found on the upper right bank. A tributary estimated at $.04 \text{ m}^3/\text{sec}$ enters from the left bank near the start of the Section. Minimal ASA is present as most of the riffles are moss covered large cobble. Good rearing habitat is present in the tributary, but only rearing trout were observed.

Section 9: The mainstem splits into two and three channels. The main channel to the right is surveyed. The main channel to the left is about 250 m. long. There is a 100 m. long by 5 m. stretch with 40% fair quality ASA.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 101-80-36 Date 7/23/84

1. Reach	4	5	5	5	5				
2. Section	10	11	12	13	14				
3. Section Length (m)	100	100	100	100	100				
4. Gradient	3	6.5	7	7	10				
5. Water Quality	3	3	3	3	3				
6. Water Width a. channel	5.5	7	12	10	13				
b. water	3.5	5.5	11	3	9				
c. special character	-	-	-	-	-				
7. Water Type % SS	30	15	15	10	10				
SF	70	85	85	89	89				
DS				1	1				
DF									
8. Undercut Banks (m) left	0	0	0	0	0				
right	20	0	0	0	0				
9. Debris Cover % small	3	0	0	0	0				
large	8	1	1	1	1				
10. Riparian Vegetation %	5	1	1	1	1				
11. Substrate %:									
a. boulders	50	60	80	80	10				
b. cobble	30	25	15	10	5				
c. gravel	20	15	5						
d. sand									
e. organic muck				10	85				
f. bedrock									
g. other									
12. ASA	5	0	0	0	0				
13. Gravel Shape	2,3	2,3	2,3	2,3	2,3				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100				
b. type	B	B	B	B	B				
15. Average Depth (cm)	8	13	18	30	50				
16. Beaver Activity	5	5	5	5	5				
17. Potential Barrier	-	-	-	-	-				
18. Aquatic Vegetation									
a. type	3/1	3/1	3/1	3/1	1/3				
b. density	1/2	1/2	1/2	1/2	1/2				
19. Sampling	Y	-	-	-	-				
20. Rearing Area	25	15	15	10	10				
21. Comments									

Section 10: Fair numbers of rearing coho and trout are observed as the large debris in this Section has provided some cover.

Section 11: The gradient and substrate size increases in this reach. Both upper banks get steep. The channelling and braiding end in this Section.

Section 12: Rearing trout only were observed above this Section.

Section 14: A 3 m. barrier falls is present 60 m. into the Section. Rearing trout are observed above the falls. The survey was discontinued at end of Section. Bedrock is becoming the dominant substrate material. 100 m. beyond the end of the survey is another 3.5 m. barrier falls. The substrate is bedrock and boulders. 100 m further is a bedrock chute that is another probable barrier. No ASA and only limited habitat is available.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B ADF&G No. 101-80-36 Date 7/11/84

1. Reach	1	2	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8
3. Section Length (m)	100	100	100	100	100	100	100	100
4. Gradient	3.5	5	4	9	12	9	5	3.5
5. Water Quality	4	4	4	4	4	4	4	4
6. Water Width a. channel	4.2	4	2.6	3.5	2	3	2	2
b. water	4.2	4	2.6	3.5	2	3	2	2
c. special character	1	-	-	-	-	-	-	-
7. Water Type % SS	10	20	10	10	10	10	10	10
SF	80	69	88	88	88	88	88	88
DS	5	10	1	1	1	1	1	1
DF	5	1	1	1	1	1	1	1
8. Undercut Banks (m) left	40	75	90	50	70	75	80	80
right	40	75	90	50	70	75	80	80
9. Debris Cover % small	1	0	0	0	1	1	2	1
large	2	2	1	3	1	10	5	5
10. Riparian Vegetation %	40	30	70	70	70	80	60	70
11. Substrate %:								
a. boulders	74	25	30	69	69	60	55	60
b. cobble	10	70	69	25	30	30	30	20
c. gravel	5	5	1	1	1	5	5	5
d. sand	1					5	10	15
e. organic muck								
f. bedrock	10			5				
g. other								
12. ASA	1	10	1	0	0	1	0	1
13. Gravel Shape	2	2	2	2	2	2	2	2
14. Streambank Vegetation								
a. percentage	10/90	100	100	100	100	100	100	100
b. type	A/B	B	B	B	B	B	B	B
15. Average Depth (cm)	10	30	30	17	17	60	30	25
16. Beaver Activity	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-
18. Aquatic Vegetation								
a. type	1	1	1	1	1	1	1	1
b. density	1	2	2	2	2	2	2	2
19. Sampling	Y	-	-	-	Y	-	-	-
20. Rearing Area	10	25	15	15	15	10	15	15
21. Comments								

Section 1: Poor rearing habitat is available due to the high water velocity. Even the undercut banks contain fast water. The survey was conducted when the stream is in a high water stage. The substrate is covered with a dense moss growth. The temperature and pH were 11°C and 6 respectively.

Section 2: The stream begins to meander severely. The banks are undercut and blueberry bushes are thick along the bank. There is little debris or variation in the stream habitat. The ASA is poor quality due to the size and compactness of the large cobble substrate.

Section 4: There is an increase in the gradient and size of the substrate. The overall habitat of the stream does not change much though. The swift nature of the stream

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 4, continued: negates the undercut banks and overhanging riparian vegetation.

Section 7: The gradient decreases, but the habitat remains unchanged.

Section 8: The survey was discontinued. The stream continues in a similar fashion beyond here. Some braiding is present and the gradient increases to 12%.

FISH SAMPLING FORM

ADF&G No. 101-80-36 Date 7/23/84 Stream Name _____

Survey Area Area A H₂O Temp. 11°C Bait Braunswäger

Trap No.	Time Set	Time Pulled	Species	Comment
1	0905	1305	Ø	Section 3
2	1215	1235	Ø	Section 10 coho fry observed

FISH SAMPLING FORM

ADF&G No. 101-80-36 Date 7/11/84 Stream Name

Survey Area B H₂O Temp. 11°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1525	1740	CT-110 mm DV-115 mm	Section 1
2	1600	1630	Ø	Section 5

PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/13/78	800			all intertidal
8/6/ 77	500			poor visability - aerial tidal survey
8/11/80	1,000			
8/3/81	1,000			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-14 2. Historical Fish PS,SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-38

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E, T69S, S-31

5. Latitude and Longitude 55°50'15", 131°49'30 6. Agency Unit 05

7. Aerial Photo No. 0033,573,110,8-18-73,02190. 8. MGMT Area K29-722

9. Estimated Flow .3 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical access logging

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 12°

15. pH 6.5 16. Intertidal Zone a. Gradient 3

b. Bottom type 1. fines 10 2. gravel/small cobble 35

3. large cobble/boulders/bedrock 55

c. ASA poor

d. Schooling only in Spacious Bay

e. Shellfish potential Dungeness crab in bay

f. Anchorage unprotected and large tidal flat

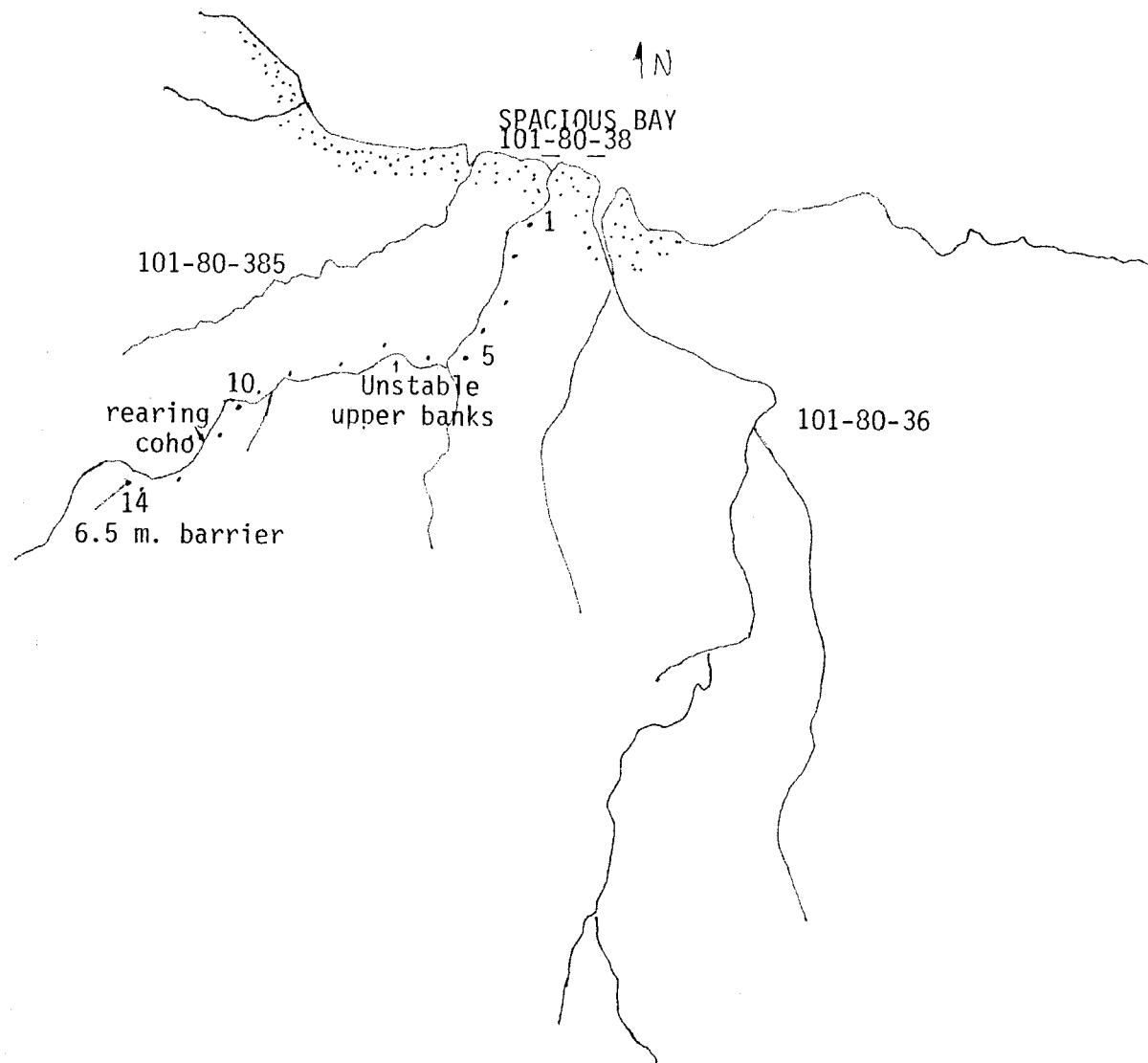
17. Comments

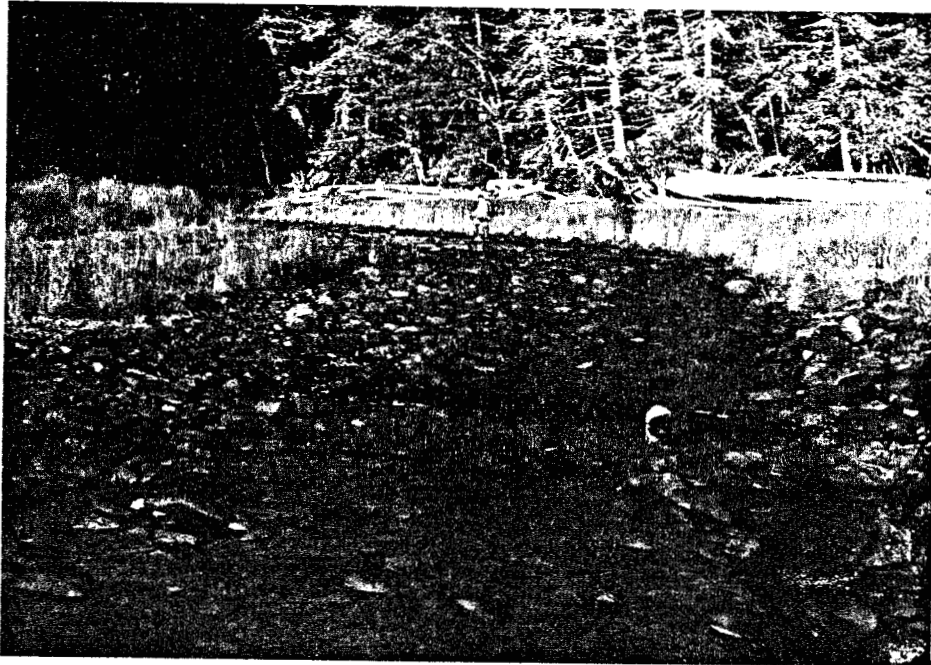
The ITZ substrate is compact and filamentous algae is present. The ASA was estimated at only 16 m².

101-80-38 is limited by its large substrate and poor quality ASA. There also is a lack of good quality rearing area. The first five Sections contain most of the ASA and quality rearing habitat. Rearing coho were observed with regularity, although in low density, up to Section 6. A patch of poor ASA and a few rearing coho were observed in Sections 11 and 12. A 6.5 m. barrier falls is at the end of Section.

18. Investigators Burns/Cariello 19. Weather 2

20. Date 7/24/84 -738- 20. Time 0615-1130

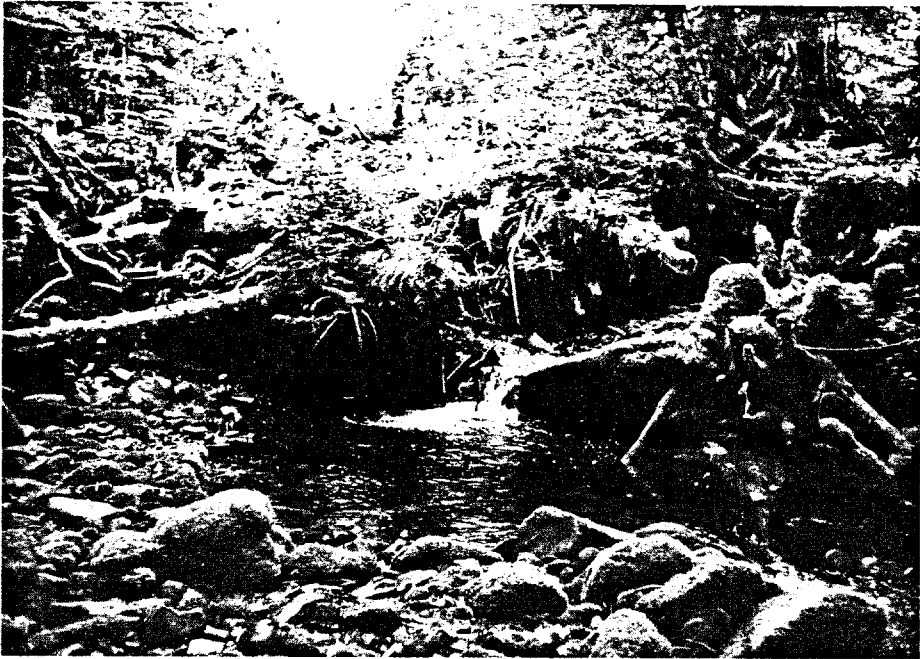




1. Upper ITZ



2. Section #3



3. Debris block in Section #5



4. Section #11

101-80-38



5. Barrier falls 70 m. into Section #14.



6. Taken above the barrier falls.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	6	5	30					
2	100	4.2	5	21					
3	100	4.0	5	20					
4	100	3.7	1	3.7					
5	100	6.5	5	32.5					
6	100	5.7	0	0					
7	100	5.0	0	0					
8	100	3.0	0	0					
9	100	4.8	0	0					
10	100	2.5	0	0					
11	100	3.0	5	15.0					
12	100	4.3	10	43					
13	100	3.5	1	3.5					
14	70	3.0	0	0					
Total ASA				168.7m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-80-38

1. Section Number	1	2	3	4	5	6	7	8	9	10
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5	C-5	C-5	C-5	C-5	C-5	C-5
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
5. Lower Bank Composition										
a. bedrock or boulder	30	30	30	30	100	100	100	100	78	100
b. rubble	30	30	30	30					15	
c. cobble	20	25	25	25					5	
d. decomposed organic mat.										
e. gravel	10	10	10	10					1	
f. sand & silt	10	5	5	5					1	
6. Bed substrate composition										
a. bedrock or boulder	50	60	50	60	50	60	65	65	65	60
b. rubble & cobble	30	25	30	25	30	25	20	20	20	25
c. coarse gravel	10	10	10	10	15	10	10	10	10	10
d. fine gravel & sand	10	5	10	5	5	5	5	5	5	5
e. silt-clay deposits										

7. Comments
 Section 1: Evidence of logging - difficult to classify riparian vegetation.
 Section 5: Upper banks get quite steep with bedrock visible on upper and lower bank.
 Section 6: Cedar becomes dominant conifer in riparian vegetation slope of upper banks vary between 90 and 150%.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-80-38

1. Section Number	11	12	13	14						
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5.7						
4. Incision Depth (m)	1.5	1.0	1.0	1.0						
5. Lower Bank Composition										
a. bedrock or boulder	20	65	100	100						
b. rubble	60	10								
c. cobble	10	10								
d. decomposed organic mat.										
e. gravel	5	10								
f. sand & silt	5	5								
6. Bed substrate composition										
a. bedrock or boulder	40	30	50	50						
b. rubble & cobble	30	40	25	25						
c. coarse gravel	20	20	15	15						
d. fine gravel & sand	10	10	10	10						
e. silt-clay deposits										

7. Comments

Section 11: Upper banks flatten to 40% gradient. Much alder along stream
Section 13: Return to steep upper banks. Devils club on left upper bank.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-38 Date 7/24/84

1. Reach	1	1	1	1	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	4	4	4	4	4	7	7	7.5
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	11	6.2	7	4.7	8.5	5.7	5	6	4.8
b. water	6	4.2	4	3.7	6.5	5.7	5	3	4.8
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	25	20	30	15	20	10	15	10	15
SF	75	75	70	85	80	90	85	85	85
DS		5						5	
DF									
8. Undercut Banks (m) left	1	1	0	1	0	0	1	0	0
right	10	1	10	1	1	0	1	0	1
9. Debris Cover % small	2	1	2	1	1	1	1	1	1
large	10	8	10	1	5	3	1	1	1
10. Riparian Vegetation %	2	1	5	1	5	5	5	5	5
11. Substrate %:									
a. boulders	50	60	50	50	45	50	50	45	35
b. cobble	30	25	30	25	30	25	20	20	20
c. gravel	15	15	20	15	20	14	15	15	15
d. sand	5								
e. organic muck									
f. bedrock				10	5	10	15	20	30
g. other									
12. ASA	5	5	5	1	5	0	0	0	0
13. Gravel Shape	2	2	2	2	1,2	1,2	1,2	1,2	1,2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	50/50	100
b. type	B	B	B	B	B	B	B	B/C	C
15. Average Depth (cm)	8	13	35	30	10	8	30	40	10
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	2	-
18. Aquatic Vegetation									
a. type	3/1,2	3/1,2	3/1	3/1	3/1	3/1,2	3/1,2	3/1,2	1/1,2
b. density	1/3	1/3	1/3	1/2	1/3	1/3	1/3	1/3	1/3
19. Sampling	-	Y	-	Y	-	-	-	-	Y
20. Rearing Area	20	20	25	10	20	10	15	15	15
21. Comments									

Section 1: A good stretch of ASA is available at the interface of the ITZ and Section 1. Large debris and pool area provide good rearing habitat although it is difficult to observe rearing fish due to the lack of light. Good quality ASA is continued to small patches after the first 50 m. Evidence of logging is present on both banks up through Section 2.

Section 2: The left bank is steep and unstable. There is exposed soil for 40 m. and much unstable ground covered with ferns.

Section 3: The rearing habitat continues to be good quality and rearing trout were observed in the pools. Recent large spruce blowdown from the right bank are across stream.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 4: The amount and quality of rearing area decreases in this Section. This reach continues through Section 10. Bedrock begins appearing in the stream bed and the substrate size increases. The left bank gets steep midway through the Section.

Section 5: A small tributary with an estimated flow of $.03 \text{ m}^3/\text{sec}$ enters from the left bank near the start of the Section. The substrate is predominately mossy boulders and cobble. Patches of blue clay are apparent. The little ASA present in the tributary is poor quality due to its compactness. Some rearing habitat is available although very few rearing fish were observed. The tributaries gradient is 8%. A log jam is present in the mainstem near the tributary entrance. Several rearing coho are observed in this vicinity. The upper banks begin to get steep and bedrock is present.

Section 6: Both upper banks have gradients that vary between 90 and 150%. Slumping present on the upper right bank. The left upper bank is unstable also, with fractured bedrock present. The upper banks remain steep and unstable in places through Section 10. Few rearing fish are observed. Only a single rearing coho is observed in Section 6.

Section 8: Several sets of fish bones were found on the bank. A 1 m. falls at the end of the Section is a possible PS barrier.

Section 9: A tributary with an estimate flow of $.04 \text{ m}^3/\text{sec}$ enters from the left bank midway through the Section. The tributary gradient is 8% and increases to 10% as it enters a small V-notch. A possible debris barrier is present 30 m. from the mainstem. The substrate is predominately boulders and large cobble with little ASA or rearing habitat available.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-38 Date 7/24/84

1. Reach	2	3	3	4	4				
2. Section	10	11	12	13	14				
3. Section Length (m)	100	100	100	100	100				
4. Gradient	6	5	5	6	6				
5. Water Quality	3	3	3	3	3				
6. Water Width a. channel	3.5	3.8	6.3	8.5	8				
b. water	2.5	3	4.3	3.5	3				
c. special character	-	1	-	-	-				
7. Water Type % SS	15	20	30	15	40				
SF	85	80	70	85	60				
DS									
DF									
8. Undercut Banks (m) left	0	1	1	0	0				
right	1	0	1	0	0				
9. Debris Cover % small	1	1	1	1	2				
large	1	5	3	5	10				
10. Riparian Vegetation %	5	5	5	1	1				
11. Substrate %:									
a. boulders	35	40	30	25	25				
b. cobble	25	30	40	25	25				
c. gravel	15	30	29	23	23				
d. sand			1	2	2				
e. organic muck									
f. bedrock	25			25	25				
g. other									
12. ASA	0	5	10	1	0				
13. Gravel Shape	1,2	1,2	1,2	1,2	1,2				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100				
b. type	C	C	B	B	B				
15. Average Depth (cm)	30	25	10	15	25				
16. Beaver Activity	5	5	5	5	5				
17. Potential Barrier	-	-	-	-	2				
18. Aquatic Vegetation									
a. type	3/1,2	3/1,2	3/1,2	3/1,2	3/1,2				
b. density	1/3				1/3				
19. Sampling	-	Y	-	-	-				
20. Rearing Area	15	20	25	15	50				
21. Comments									

Section 11: The upper banks flatten out to about a 40% gradient and alder is thick along the stream. The ASA improves, although the substrate is large. A group of rearing coho were observed.

Section 12: Several more rearing coho were observed. A patch of coarse gravel mixed with flat cobble provides some fair quality ASA.

Section 13: The upper banks get steep once more in this Section. Fractured bedrock is present on the right bank. Blowdown from SE winds is present on the left upper bank. Rearing trout up to 125 mm were observed.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 14: The survey is discontinued 70 m. into the Section where a 6.5 m. barrier falls is present. The substrate is mainly boulder and large cobble above the falls. Little, if any, ASA and poor rearing habitat was available for 200 m.

FISH SAMPLING FORM

ADF&G No. 101-80-38 Date 7/24/84 Stream Name _____

Survey Area A H₂O Temp. 12°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0700	1115	CT-83, 102, 115 ST-93,87	Section 2
2	0730	0750	CT-110 mm	Section 4
3	0845	0910	CT-110 mm	Section 9
4	0940	1030	Ø	Section 11 coho observed

PEAK ESCAPEMENT RECORD

101-80-38

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/23/79	500			at mouth

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-5 2. Historical Fish PS, SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-385

3. USGS Map No. Ketchikan D-6 4. Legal Location R89E, T69S, S-31

5. Latitude and Longitude 55°50'40"N, 131°49'40"W 6. Agency Unit 05

7. Aerial Photo No. 0033,573,110,8-18-73,02190. 8. MGMT Area K29-722

9. Estimated Flow .18 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical access logging

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 12°C

15. pH 6 16. Intertidal Zone a. Gradient 4%

b. Bottom type 1. fines 5 2. gravel/small cobble 45

3. large cobble/boulders/bedrock 50

c. ASA Poor

d. Schooling Only in Spacious Bay

e. Shellfish potential Dungeness crab in bay

f. Anchorage unprotected and a large tidal flat at mouth

17. Comments

The upper ITZ ASA is poor quality. The middle ITZ contains about 20 m² of possible ASA.

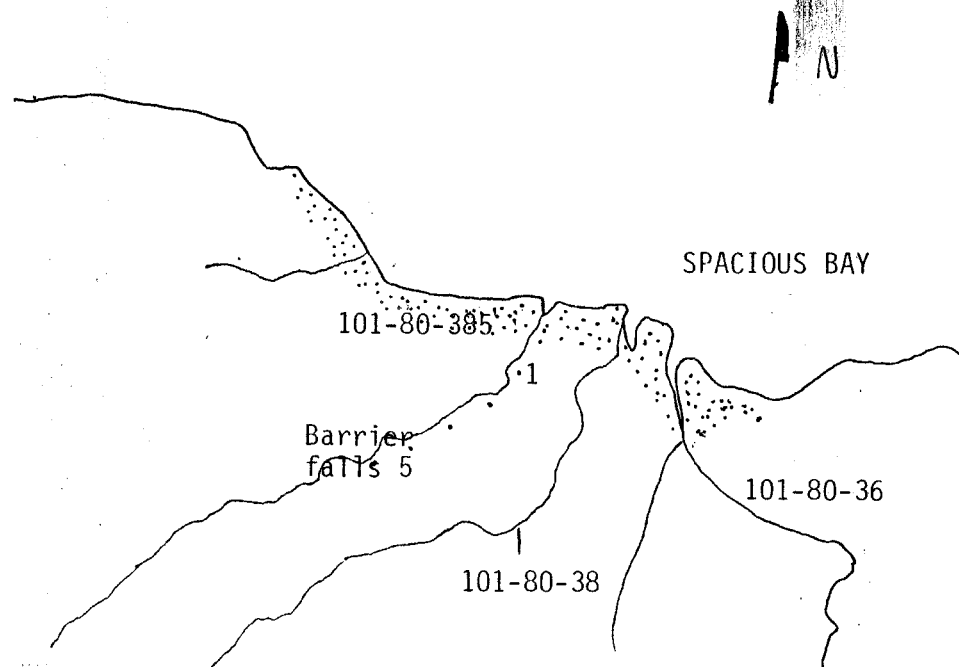
101-80-385 is limited by its large substrate and a lack of rearing area. Potential debris and falls barriers are present throughout Section 5 and a probable 2 m. barrier falls is present. The best ASA is above a potential log jam barrier in Section 3. The rearing habitat is uniformly poor quality with no undercut banks and little debris to provide cover.

18. Investigators Burns/Cariello

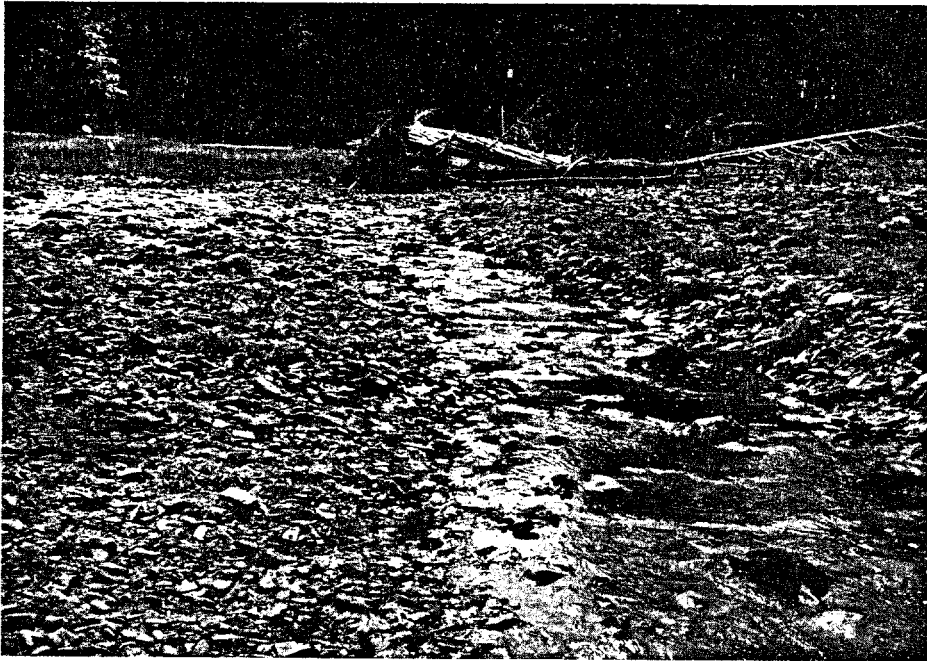
19. Weather 6

20. Date 7/23/84

Time 1345 - 1600



101-80-385



1. ITZ



2. Beginning of Section #1.



3. Beginning of Section #4.



4. Falls 90 m. into Section #4.

101-80-385



5. 200 m. past the end of Section #5.

101-80-385

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	3.0	1	3					
2	100	2.0	5	10					
3	100	1.0	20	20					
4	100	3.0	1	3					
5	50	1.0	0	0					
Total				36 m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name _____ ADF&G No. 101-80-385

1. Section Number	1	2	3	4	5					
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5						
4. Incision Depth (m)	1.0	1.0	1.0	1.0						
5. Lower Bank Composition										
a. bedrock or boulder	40	100	40	100	100					
b. rubble	20		15							
c. cobble	15		30							
d. decomposed organic mat.										
e. gravel	10		10							
f. sand & silt	15		5							
6. Bed substrate composition										
a. bedrock or boulder	65	65	45	55	80					
b. rubble & cobble	20	25	30	30	15					
c. coarse gravel	10	10	20	15	5					
d. fine gravel & sand	5		5							
e. silt-clay deposits										

7. Comments

Section 2: Cedar is the predominate conifer on right bank, although hemlock and some spruce present.
Section 5: Vertical bedrock fractured along both banks.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-385 Date 7/23/84

1. Reach	1	1	1	1	2				
2. Section	1	2	3	4	5				
3. Section Length (m)	100	100	100	100	50				
4. Gradient	7.5	7	6	9	23				
5. Water Quality	3	3	3	3	3				
6. Water Width a. channel	6.5	4	4	4.5	4.5				
b. water	3	2	1	3	1				
c. special character	-	-	-	-	-				
7. Water Type % SS	25	30	30	30	10				
SF	75	70	69	69	90				
DS			1	1					
DF									
8. Undercut Banks (m) left	0	0	1	0	0				
right	0	0	0	0	0				
9. Debris Cover % small	1	1	1	1	0				
large	10	2	3	5	0				
10. Riparian Vegetation %	15	10	10	5	1				
11. Substrate %:									
a. boulders	40	30	30	40	30				
b. cobble	20	25	30	30	15				
c. gravel	15	10	25	15	5				
d. sand									
e. organic muck									
f. bedrock	25	35	15	15	50				
g. other									
12. ASA	1	5	20	1	0				
13. Gravel Shape	2	2	2	2	2				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100				
b. type	B	B	B	B	B				
15. Average Depth (cm)	10	10	13	8	3				
16. Beaver Activity	5	5	5	5	5				
17. Potential Barrier	2	-	3	2	2				
18. Aquatic Vegetation									
a. type	3/1	3/1	3/1	3/1	3/1				
b. density	2/3	2/2	2/3	2/3	2/3				
19. Sampling	Y	-	-	Y	-				
20. Rearing Area	20	25	25	20	1				
21. Comments									

Section 1: Rearing fish were observed in the pool at the interface of Section 1 and ITZ. A 1 m. deb is falls at the start of Section 1 could be a potential obstruction to PS. Evidence of handlogging is present along both banks. Both banks are unstab in this Section. The substrate is large and stretches of bedrock are present.

Section 2: Rearing habitat is poor quality. There is little debris or cover and rearing trout were observed infrequently. The right bank is steep bedrock.

Section 3: There is a potential dam barrier at the start of the Section, with a

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3, continued: buildup of boulders and large cobble. There is fairly good ASA above the dam for 40 m. before the substrate size increases and bedrock appears. Both banks become steep.

Section 4: Evidence of slumping is present on both steep upper banks. There is another log jam near the start of the Section which is not a barrier.

Section 5: The gradient increases to 23% at the end of Section 4 and the start of Section 5. Probable barriers with 1.5 m. debris and 1.5 m. bedrock falls are present in this steep chute that is 25 m. long. Fifty meters into the Section is another 2 m. barrier falls and the survey is discontinued.

Above the falls, the substrate was predominately boulder and bedrock for 200 m. A 50 m. stretch with some gravel and cobble ASA is present above here. The substrate then turns to mainly boulder with some cobble. Muskeg is present along the right bank.

FISH SAMPLING FORM

ADF&G No. 101-80-385 Date 7/23/84 Stream Name
 Survey Area A H₂O Temp. Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1520	1550	SS-75,90 mm	Section 1
2	1440	1510	Ø	Section 4

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas A 1-4 2. Historical Fish _____

Part II.

1. Stream Name Spacious Bay #3 2. ADF&G Catalog No. _____

3. USGS Map No. Ketchikan D-6 4. Legal Location R89F, T69S, S-31

5. Latitude and Longitude 55°50'30", 131° 6. Agency Unit 05

7. Aerial Photo No. 0033,573,110,8-18-73,02190 8. MGMT Area K29-722

9. Estimated Flow .02 m³/sec 10. Flow Stage 2

11. Land Use a. present none observed b. historical access logging

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 13°C

15. pH 6 16. Intertidal Zone a. Gradient 4

b. Bottom type 1. fines 15 2. gravel/small cobble 70

3. large cobble/boulders/bedrock 15

c. ASA good quality, but small area

d. Schooling in Spacious Bay only

e. Shellfish potential Dungeness crab in bay

f. Anchorage large tidal flat at mouth

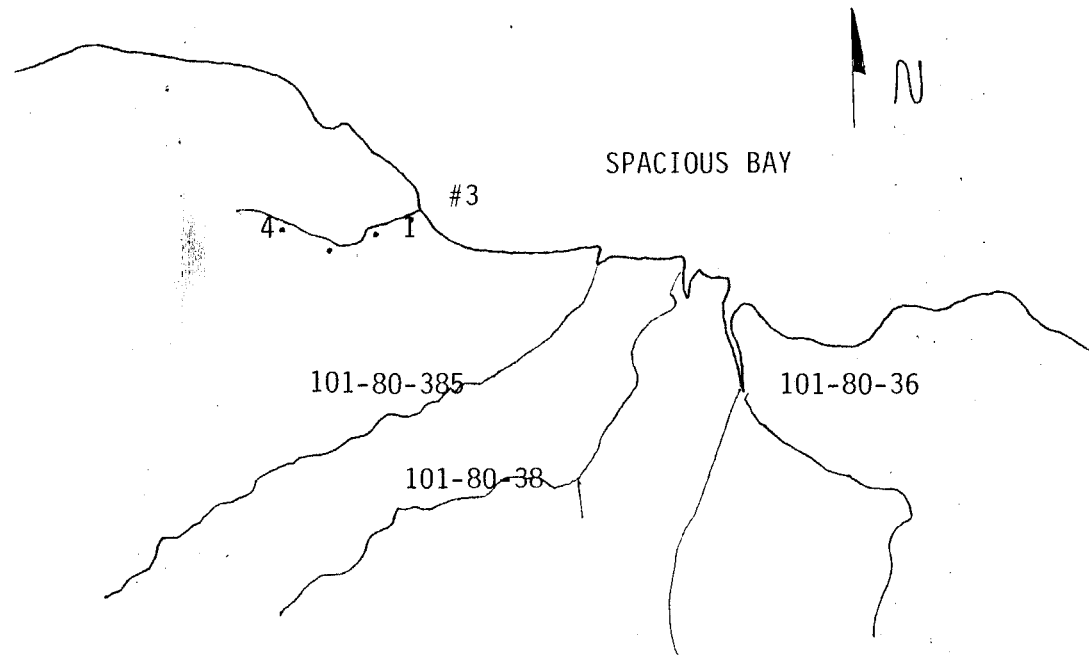
17. Comments

The upper ITZ substrate is good quality, but the water flow is only 2.5 cm deep and 1 m. wide. About 30 m² of ASA is available. A school of about 25 rearing coho were observed in the ITZ under large debris.

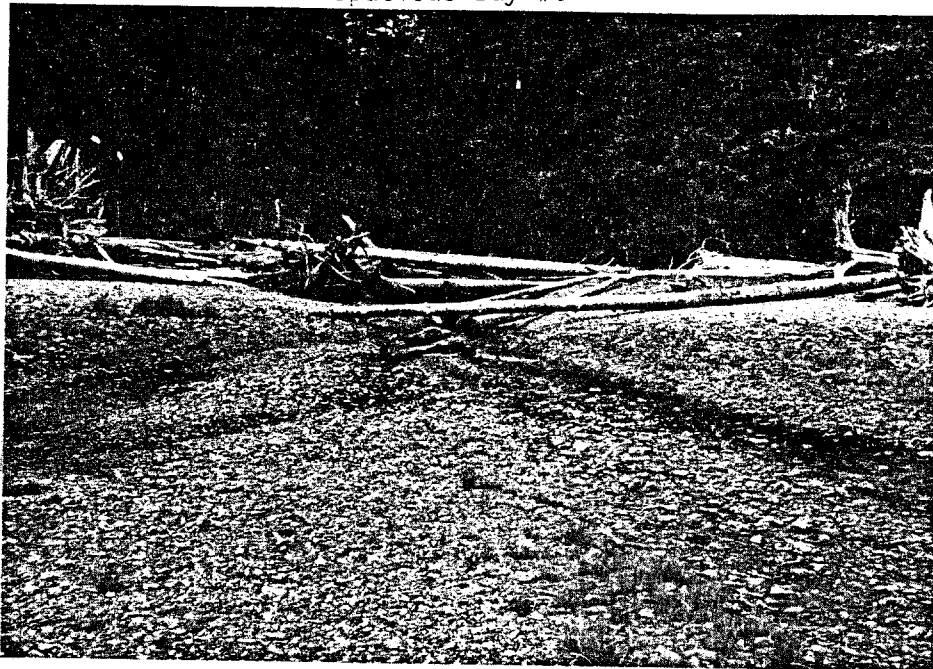
Spacious Bay #3 is a very small trickle that could provide some ASA at higher flows. Fisheries habitat is provided for about 300 m. before the stream is gradient increases and the substrate turn to mossy boulders. Only rearing area was available at the time of the survey and rearing trout were both observed and captured during the survey. Rearing coho were observed in the ITZ.

18. Investigators Burns/Cariello 19. Weather 6

20. Date 7/24/84 20. Time 1145-1330



Spacious Bay #3



1. ITZ



2. Beginning of Section #1.

Spacious Bay #3



3. Section #3.

SPACIOUS BAY #3

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	1	0	0					
2	100	2	0	0					
3	100	2	0	0					
4	100	1	0	0					
Total				0 m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Spacious Bay #3

ADF&G No. _____

1. Section Number	1	2	3	4						
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-5	C-5	C-4						
4. Incision Depth (m)	.5	.5	.5	.5						
5. Lower Bank Composition										
a. bedrock or boulder		20	30	35						
b. rubble		20	30	35						
c. cobble	10	20	20	20						
d. decomposed organic mat.										
e. gravel	20	20	10	5						
f. sand & silt	70	20	10	5						
6. Bed substrate composition										
a. bedrock or boulder	10	5	5	40						
b. rubble & cobble	40	40	35	30						
c. coarse gravel	35	40	40	20						
d. fine gravel & sand	15	15	20	10						
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Spacious Bay #3 ADF&G No. _____ Date 7/24/84

1. Reach	1	1	1	2				
2. Section	1	2	3	4				
3. Section Length (m)	100	100	100	100				
4. Gradient	4.5	5	3.5	7.5				
5. Water Quality	3	3	3	3				
6. Water Width a. channel	4	3	2.5	1.5				
b. water	1	2	2	1				
c. special character	1	-	-	-				
7. Water Type % SS	50	60	70	50				
SF	50	40	30	50				
DS								
DF								
8. Undercut Banks (m) left	5	20	30	30				
right	10	25	30	20				
9. Debris Cover % small	10	5	2	1				
large	35	25	10	5				
10. Riparian Vegetation %	40	40	50	50				
11. Substrate %:								
a. boulders	10	5	5	40				
b. cobble	40	40	35	30				
c. gravel	45	50	55	25				
d. sand	5	5	5	5				
e. organic muck								
f. bedrock								
g. other								
12. ASA	0	0	0	0				
13. Gravel Shape	2	2	2,3	2,3				
14. Streambank Vegetation								
a. percentage	100	100	100	100				
b. type	B	B	B	C				
15. Average Depth (cm)	5	5	5	10				
16. Beaver Activity	5	5	5	5				
17. Potential Barrier	6	6	6	6				
18. Aquatic Vegetation								
a. type	3,2	1-4	1/2-4	1				
b. density	2	2	1/2	1				
19. Sampling	Y	Y	-	-				
20. Rearing Area	40	50	60	50				
21. Comments								

Section 1: There is evidence of logging on both banks for two Sections. The entire length of the stream has many stretches where the depth of the water would be a barrier to fish passage. Good rearing habitat is provided by large debris and riparian vegetation. Only a few rearing trout were observed, however. At high discharge, ASA could be as high as 30% with the substrate available.

Section 2: Possible 10% ASA at high water flow. Skunk cabbage is growing in the stream bed.

Section 3: The stream nearly dries up in places and consists mainly of trickles in

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3, continued: between pools. Rearing trout up to 100 mm were observed. The ASA might reach 10% with a increase in flow.

Section 4: Survey discontinued at end of Section. The gradient is increasing dramatically and the substrate is mainly mossy boulders and large cobble.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/24/84 Stream Name Spacious Bay #3
Survey Area ITZ H₂O Temp. 13°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1305	1315	12 SS all 50-75mm in length	ITZ
2	1200	1300	CT - 75mm	Section 1
3	1220	1250	Ø	Section 2

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas 1 1-7 2. Historical Fish

Part II.

1. Stream Name Spacious Bay #4 2. ADF&G Catalog No.

3. USGS Map No. Ketchikan D-6 4. Legal Location R88E, T69S, S-35

5. Latitude and Longitude 55° 50' 37" 131° 53' 6. Agency Unit 05

7. Aerial Photo No. 0032, 1373, 196, 9-12-73, 02190 8. MGMT Area K29-722

9. Estimated Flow .14 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical access none observed

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 11°C

15. pH 16. Intertidal Zone a. Gradient 3

b. Bottom type 1. fines 15 2. gravel/small cobble 50

3. large cobble/boulders/bedrock 35

c. ASA poor

d. Schooling in estuary only

e. Shellfish potential Dungeness crab present in Spacious Bay

f. Anchorage fair - many boulders at low tide

17. Comments The stream is shallow and braided in the ITZ. Suitable substrate is available for ASA but the flow may not be sufficient for utilization. The stream was a victim of a large mudslide, the entire length of the watershed about 10 years ago.

Spacious Bay #4 is not classified as an anadromous stream, but probably should be. Rearing coho were both captured and observed. The ASA is not abundant and the substrate tends to be compact in nature. The rearing habitat is not exceptional quality due to a lack of debris or pool area. Rearing fish were infrequently observed above the first section.

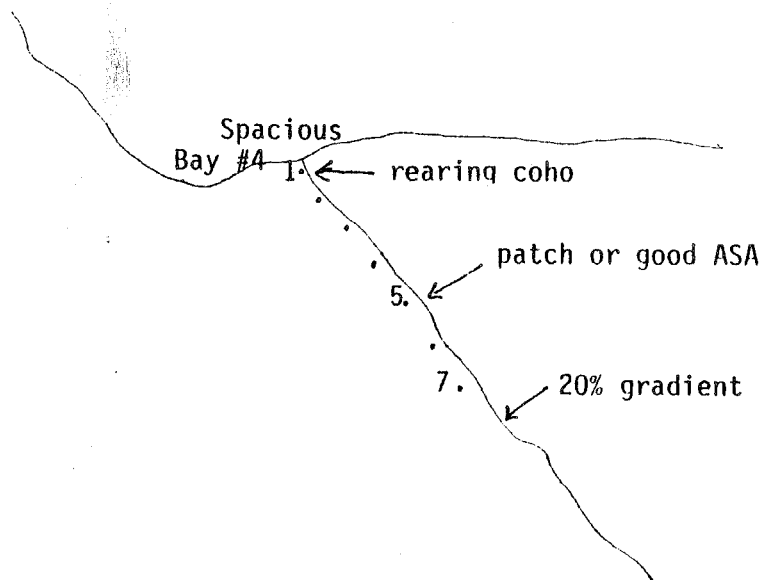
The stream was quite uniform in habitat up through Section #6 with only traces of ASA and little rearing habitat available. The gradient increased to 20% and the stream began breaking up into small tributaries beyond Section #7.

18. Investigators Burns/Cariello -771- 19. Weather 3

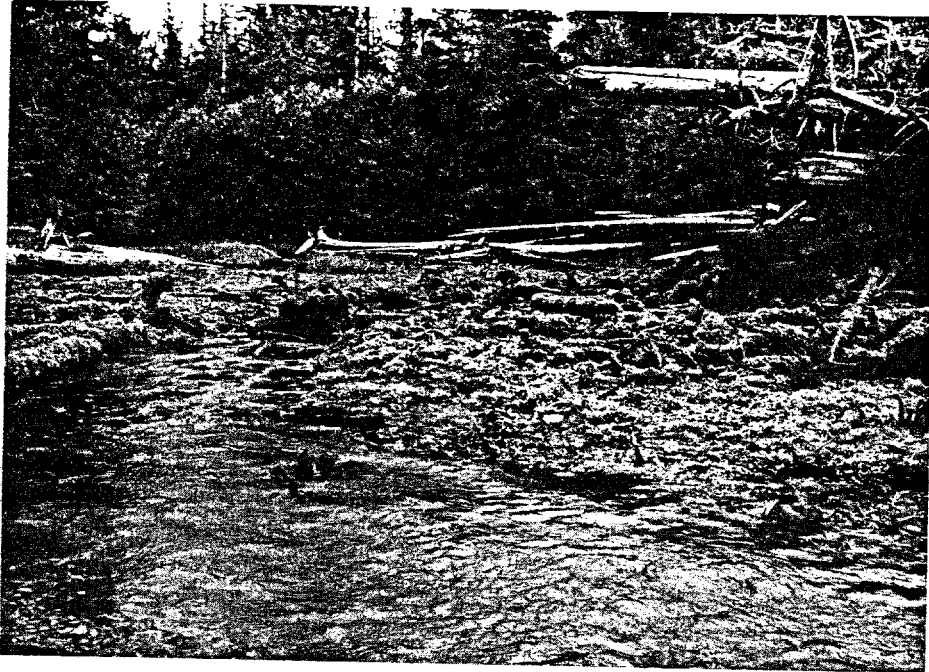
20. Date 7/10/84 20. Time 1500-1630



SPACIOUS BAY



Spacious Bay #4



1. ITZ. Large debris on the right are remnants of a large slide that occurred about 10 years ago.



2. Typical habitat: Stream was characterized by a large substrate and lack of debris loading.

Spacious Bay #4



3. Habitat above the end of the survey at Section 7

Spacious Bay #4

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	5.1	1	5.1					
2	100	3.7	1	3.7					
3	100	1.0	1	1.0					
4	100	1.2	1	1.2					
5	100	3.9	2	7.8					
6	100	3.0	0	0					
7	100	2.3	0	0					

Total ASA

18.8m²

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Spacious Bay #4 ADF&G NO. _____ Date 7/10/84

1. Reach	1	1	1	1	1	1	2
2. Section	1	2	3	4	5	6	7
3. Section Length (m)	100	100	100	100	100	100	100
4. Gradient	6	7	8	10	10	10	14
5. Water Quality	1	1	1	1	1	1	1
6. Water Width a. Channel	10.4	3.7	3.1	3.2	5.8	6.8	3.8
b. water	5.1	3.7	1	1.2	3.9	3	2.3
c. special character	1	-	-	1	1	-	-
7. Water Type % SS	5	5	5	5	5	5	5
SF	95	95	95	95	95	95	95
DS							
DF							
8. Undercut Banks (m) left	0	0	0	0	0	0	0
right	0	0	0	0	0	0	0
9. Debris Cover % small	0	0	0	0	0	0	0
large	5	1	1	1	1	1	0
10. Riparian Vegetation %	50	80	80	80	60	60	70
11. Substrate %: a. boulders	49	40	40	50	40	50	60
b. cobble	30	40	40	40	40	40	30
c. gravel	20	20	20	10	20	10	5
d. sand							
e. organic muck							
f. bedrock							5
g. other							
12. ASA	1	1	1	1	2	0	0
13. Gravel Shape	2	2	2	2	2	2	2
14. Streambank Vegetation							
a. percentage	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B
15. Average Depth (cm)	5	10	7	10	12	10	10
16. Beaver activity	5	5	5	5	5	5	5
17. Potential Barrier							
18. Aquatic Vegetation							
a. type	1	1,2	1,2	1,2,3	1,2,3	1,2,3	1,2,3
b. density	3	3	3	3	3	3	3
19. Sampling	Y	Y	Y	Y	Y	Y	Y
20. Rearing Area	5	5	5	5	5	5	5
21. Comments	Section 1: The stream is braided at the start of the section. The upper right bank is unstable with exposed soil present near the end of the section. The substrate is rather compact making the ASA minimal in quantity and quality. Rearing coho are observed although there is little rearing habitat available. The stream is shallow and fast with little debris or undercut banks. Alder up to 25' high is thick on the banks.						

Section 2: Rearing coho are infrequently observed. The thick alder continues along the stream banks.

Section 4: Slight braiding is present in Sections 4 and 5.

Section 5: The best ASA observed during the survey is present in Section 5. The ASA is still rather compact and is limited to a small braided area. A slide with exposed soil is present on the right bank.

Section 6: Several small unstable areas covered by pioneer vegetation are present on both banks.

Section 7: A small tributary with little if any ASA or rearing habitat enters from the right bank at the end of the section. The gradient and substrate size of the mainstem increase markedly. The survey was discontinued at this point. Beyond the end of the survey, the stream continues to branch into more tributaries and the stream is reduced in size. The gradient increases to 20% and the size of the boulders in the stream substrate enlarges.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/10/84 Stream Name Spacious Bay #1
 Survey Area A H₂O Temp. 11.0° Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
#1	1500	1600	5 S S	all were about 50 mm. Section #1.

BASELINE AQUATIC SURVEY

Part I.

A 1-5	D 1-52	
B 1-50	E 1-19	
1. Survey Areas C 1-9	F 1-30	2. Historical Fish <u>PS, SS, CS, SH</u>
	G 1-21	

Part II.

1. Stream Name <u>Wasta Creek</u>	2. ADF&G Catalog No. <u>101-80-40</u>
3. USGS Map No. <u>Ketchikan D-6</u>	4. Legal Location <u>R88E, T69S, S-28</u>
5. Latitude and Longitude <u>55°51'20", 131°55'02"</u>	6. Agency Unit <u>05</u>
7. Aerial Photo No. <u>0031,1373,139,9-12-73,02190</u>	8. MGMT Area <u>K29-722</u>
9. Estimated Flow <u>2m³/sec</u>	10. Flow Stage <u>2</u>
11. Land Use a. present <u>sport fishing</u> b. historical access <u>logging</u>	
12. Temperature Sensitivity and/or origin <u>5,4,1</u>	
13. Access <u>2</u>	14. Stream Temperature <u>16°</u>
15. pH <u>6.5</u> 16. Intertidal Zone a. Gradient <u>2.5</u>	
b. Bottom type 1. fines _____ 2. gravel/small cobble _____	
3. large cobble/boulders/bedrock <u>100</u>	
c. ASA <u>poor-substrate bedrock and boulders</u>	
d. Schooling <u>good schooling area in middle ITZ and Spacious Bay</u>	
e. Shellfish potential <u>Dungeness crab in Spacious Bay</u>	
f. Anchorage <u>fair, large tidal flat</u>	

17. Comments

Wasta Creek is a very large productive system. The area between the ITZ and the first lake, which was surveyed as Area A, has little ASA but contains some deep pool areas that rearing trout were utilizing.

Area B contains a large amount of ASA and rearing habitat. The best quality ASA is found in Sections 7 through 20. ASA is available up to Section 33 but the substrate is primarily small boulders beyond Section 20, PS were observed attempting to utilize it however, perhaps the ASA 's quality is better than it appears. The best rearing habitat is found from Section 1 through 20. Above Section 20 there is little debris or undercut banks and few rearing fish were observed. A 3.5 m. barrier falls is present in Section 35. An extensive reach with a low gradient is present above Section 40. Limited ASA is available but excellent rearing habitat is present. This stretch appears to be about 2 miles long.

18. Investigators <u>Burns, Cariello</u>	-779-	19. Weather <u>3,1,6</u>
20. Date <u>6/20-21/84 7/8/84 7/26/84 8/19/84 9/4/84</u> 20. Time <u>48 hrs total</u>		

BASELINE AQUATIC SURVEY, continued

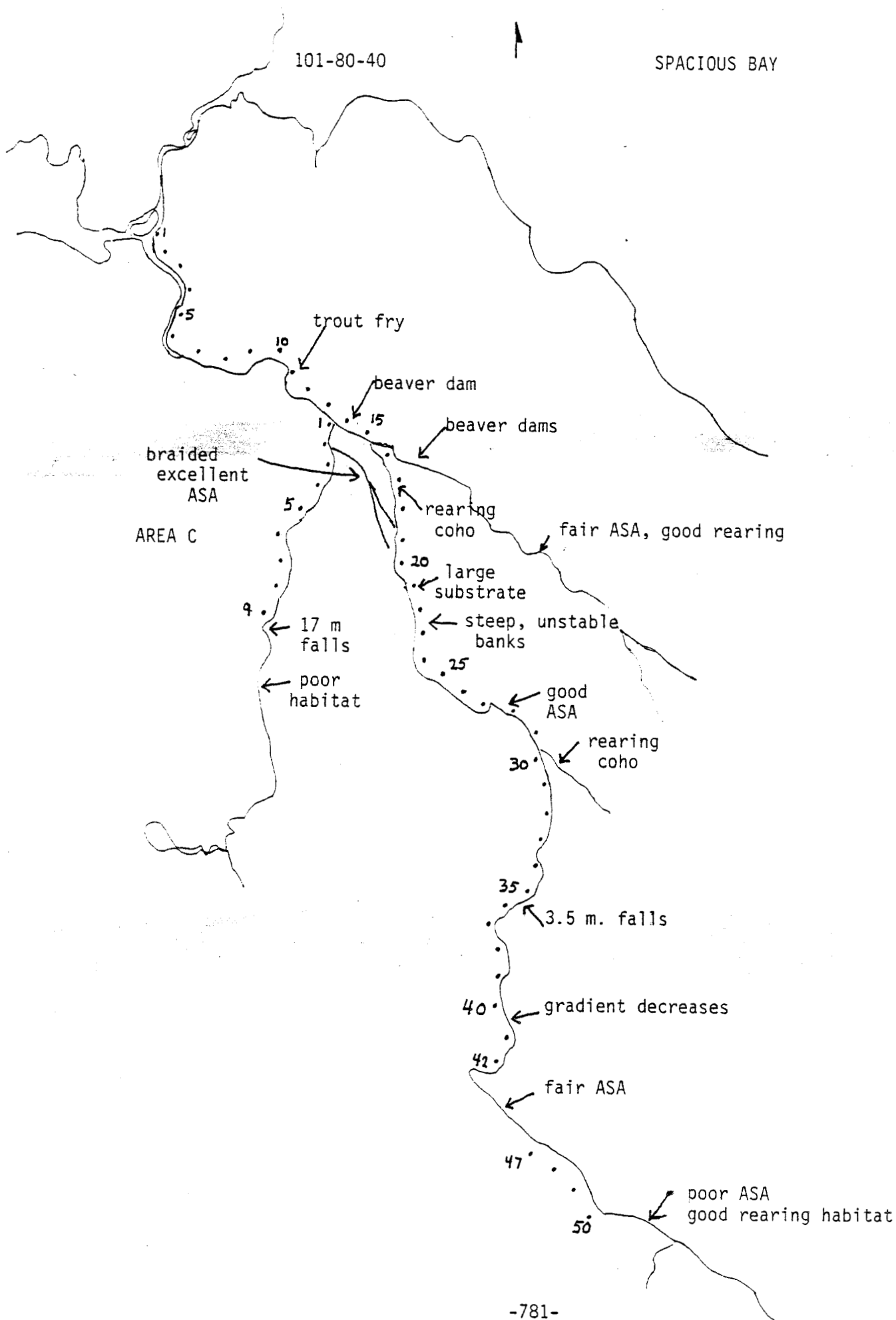
Area C contains good ASA and rearing habitat in a braided area that is connected to Area B. The fisheries habitat declines quickly however, and a 17-m barrier falls is present 800 m. from the start of Area C.

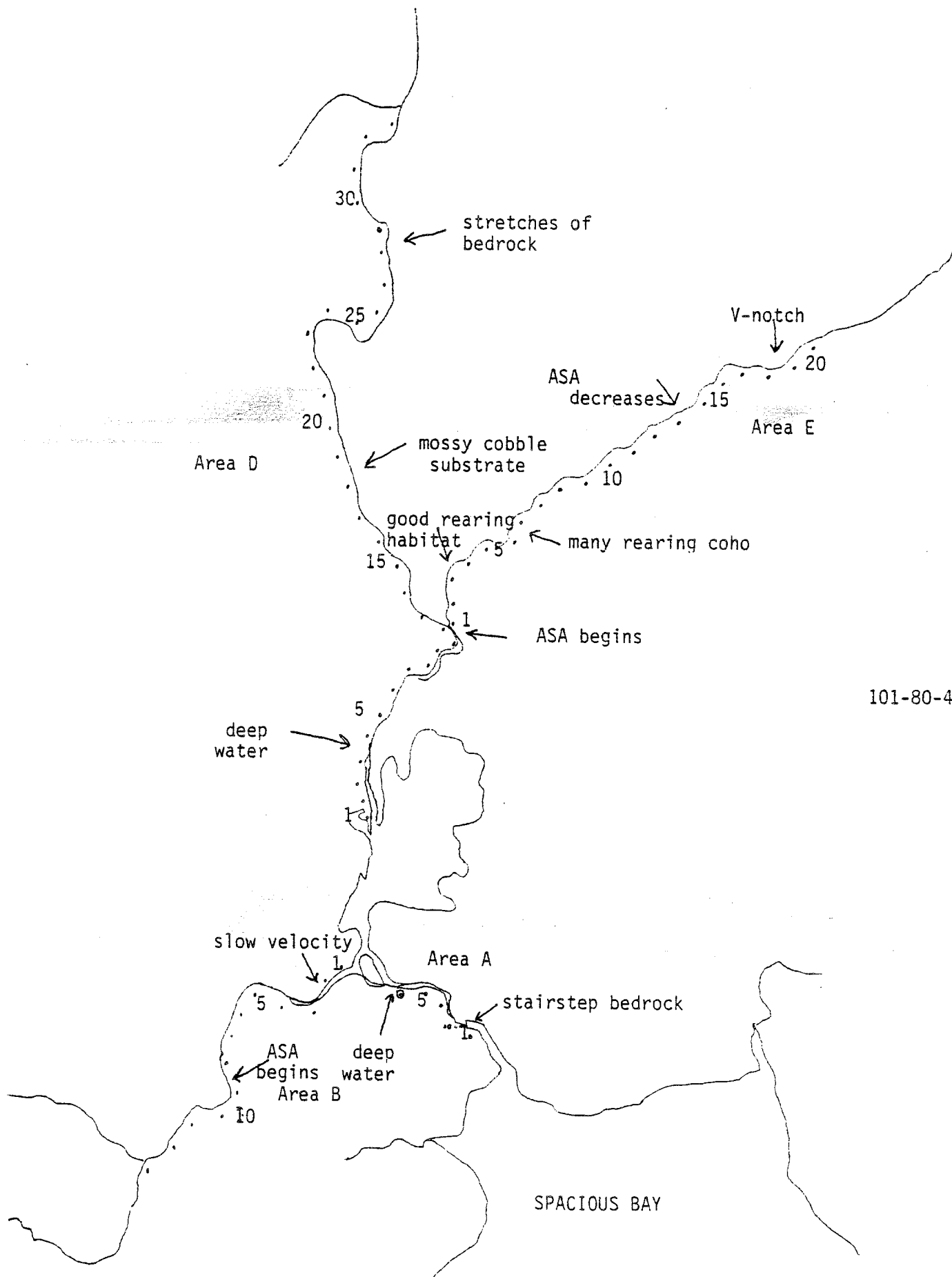
Area D is composed of the mainstem between the two lakes of Wasta Creek. The best ASA is present in Sections 10 through 22. The quality of the ASA was questioned during the survey due to presence of a moderate to heavy aquatic growth on the substrate. Large numbers of PS apparently utilize the ASA however. There is little cover present in the rearing area in Area D, but the dark color of the water and aquatic vegetation apparently provide suitable rearing habitat as rearing fish were observed throughout the area.

Area E is a tributary to Area D. Good ASA and rearing habitat are found up through Section 13. Rearing coho were abundant in this stretch.

Area F is also a tributary to Area D. It contains a large amount of good quality ASA up to Section 26. Rearing fish were observed up to the end of the survey. The stream forks into two small branches in Section 25. The gradient slowly was increasing but traces of ASA were still present. Rearing fish including coho were still observed.

Area G was the last tributary of Area D surveyed. The best ASA was present in the first 600 m. Patches of ASA, some of them large, were present however, up through Section 21 where the survey ended in a large active beaver pond. Good quality rearing area is present throughout the survey area. Rearing coho were observed in low numbers up to the end of the survey.

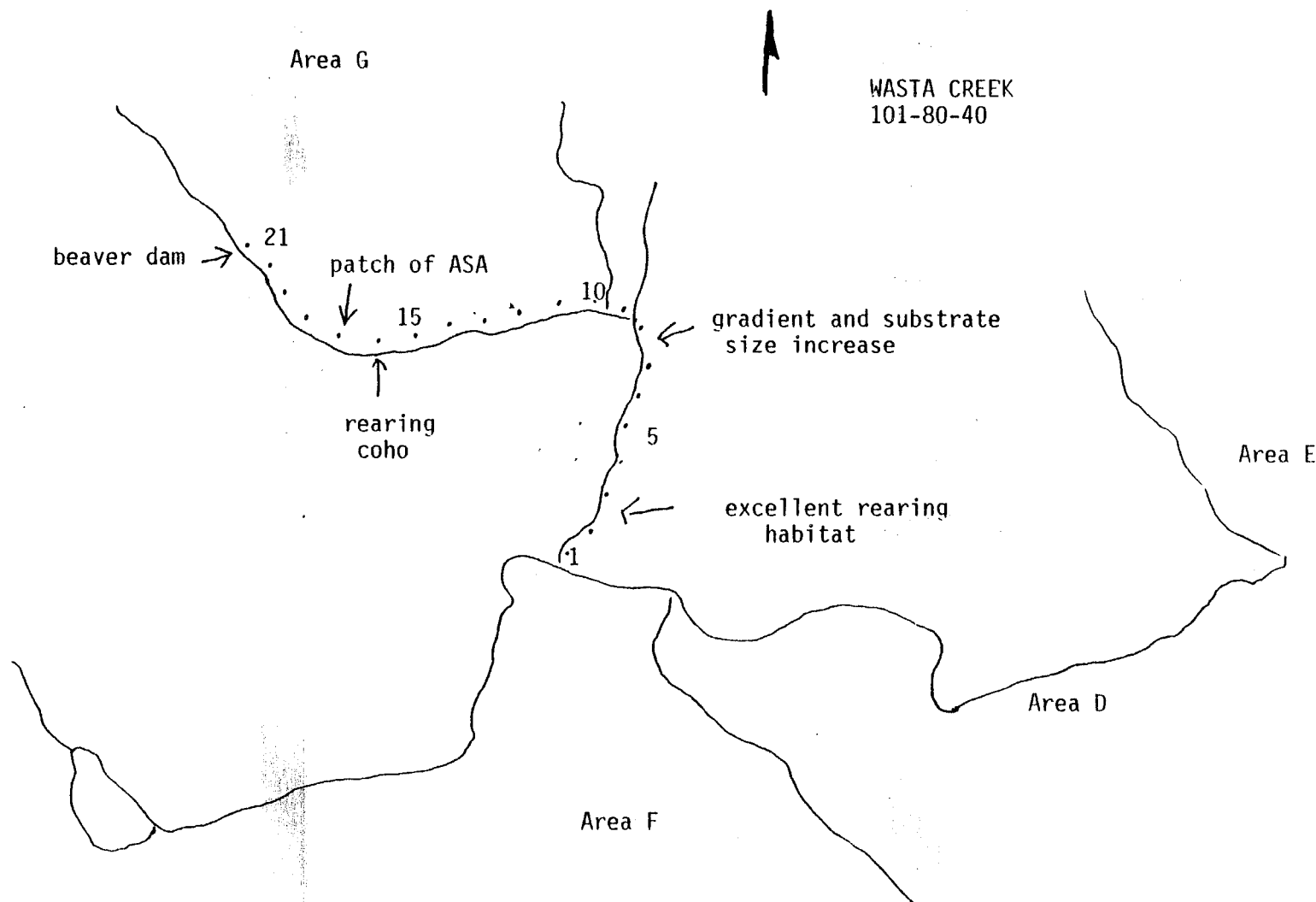


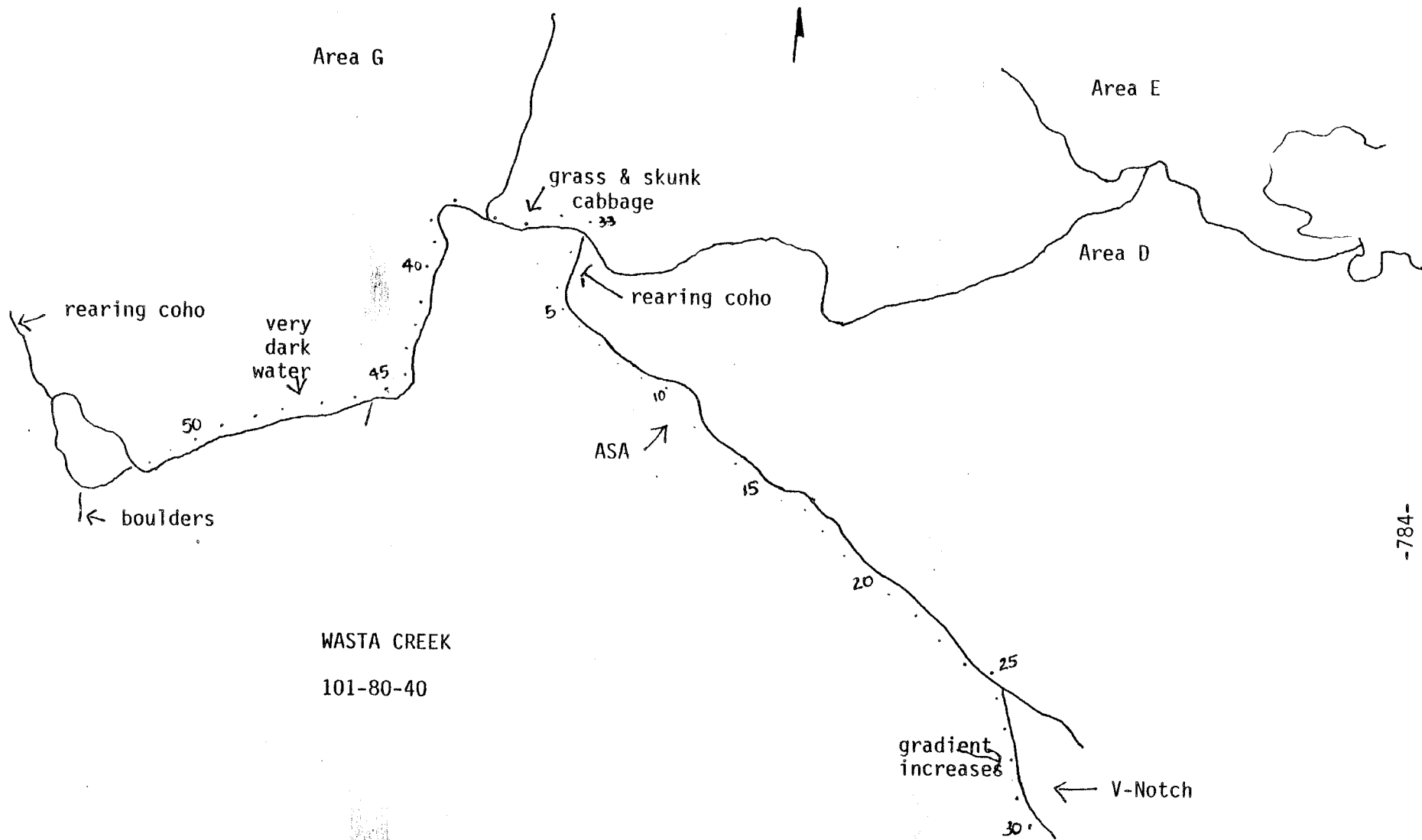


101-80-40



SPACIOUS BAY





Wasta Creek 100-80-40 Area A



1. Upper ITZ

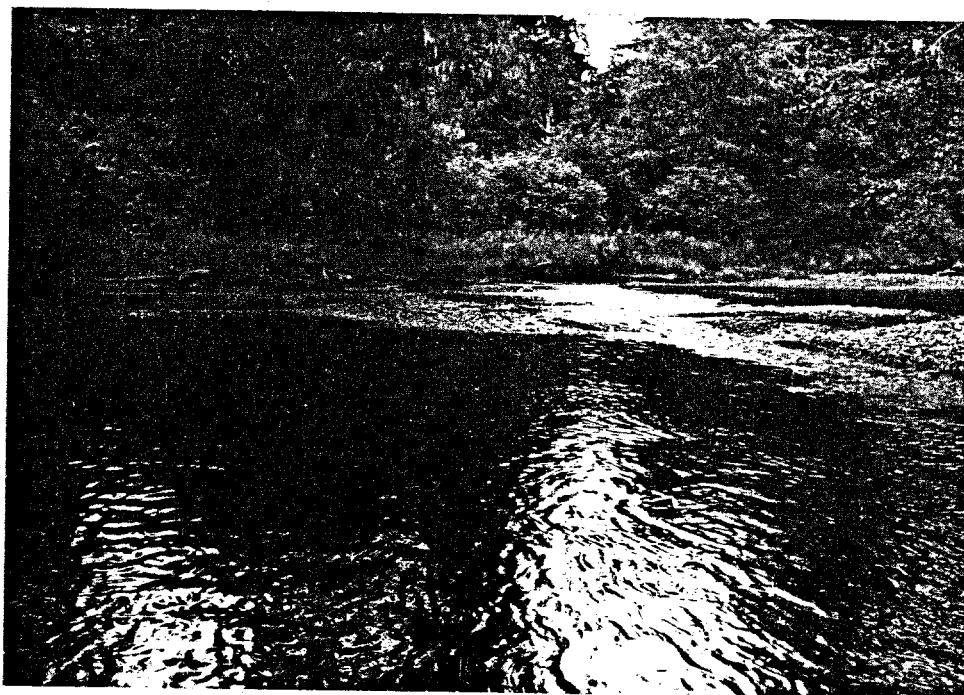


2. Section #5

Wasta Creek 101-80-40 Area B



1. Area B Section #2



2. Section #9 First good riffle area.

Wasta Creek 101-80-40 Area B



3. Section #13 Good riffle area, but ASA is compact.



4. Beaver dam 30 m. into Section #14.

Wasta Creek 101-80-40 Area B



5. 200 m. up tributary from the left bank in Section #15.



6. Excellent ASA in Section #15. Gravel is very loose.

Wasta Creek 101-80-40 Area B

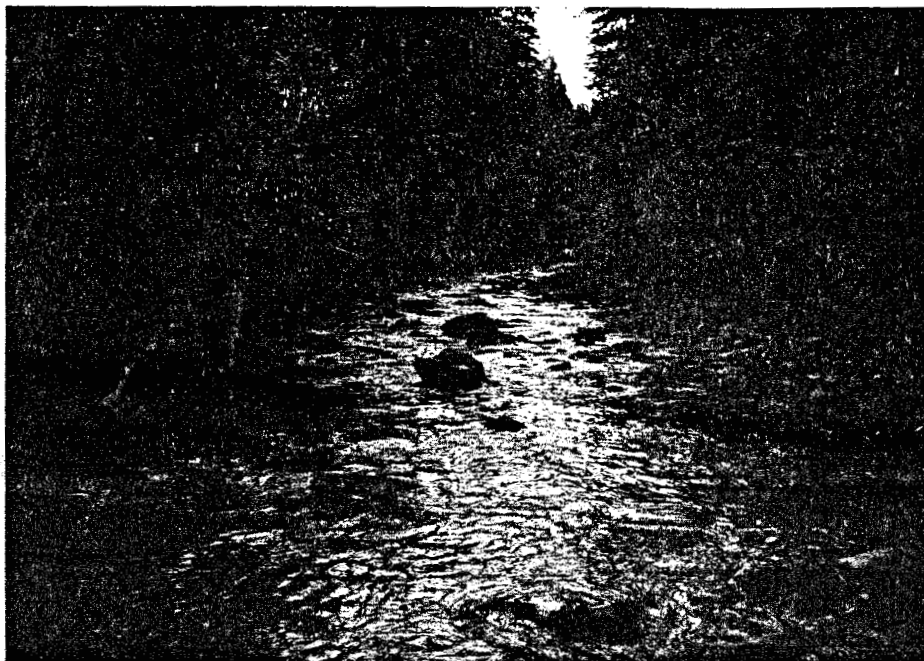


7. Section #21

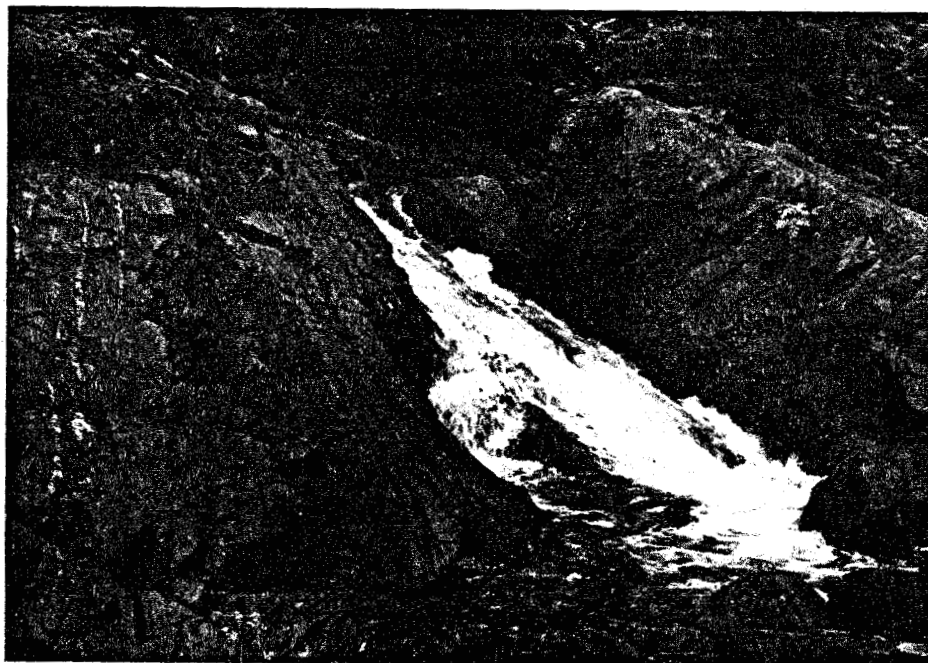


8. Slide area on left bank in Section #27

Wasta Creek 101-80-40 Area B



9. Section #30 Large substrate with a few adult pink salmon present.



10. Section #35 3.5 m. barrier falls with a gradient of 45%.

Wasta Creek 101-80-40 Area B



11. Section #39



12. Section #39 Possible velocity barrier.

Wasta Creek 101-80-40 Area B



13. Section #49 Substrate consists mostly of bedrock

Wasta Creek 101-80-40 Area C



1. Section #1 Good riffle area with many adult pink salmon.

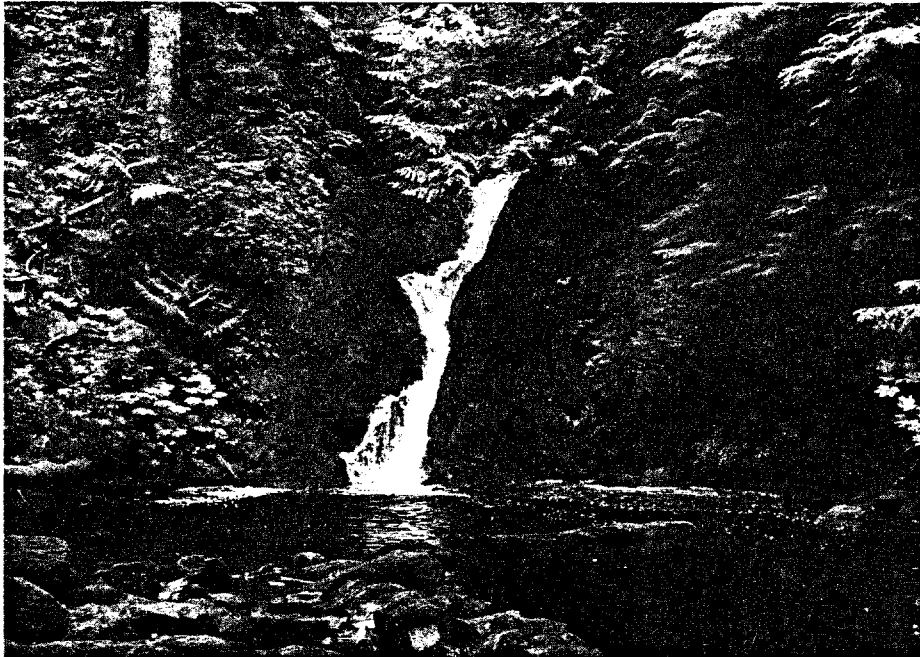


2. Section #5 Larger angular substrate with few adult pink salmon.

Wasta Creek 101-80-40 Area C



3. Section #6 Large substrate with bedrock along the right bank.



4. Section #9 17 m. Barrier falls at the end of the Section.

Wasta Creek 101-80-40 Area C



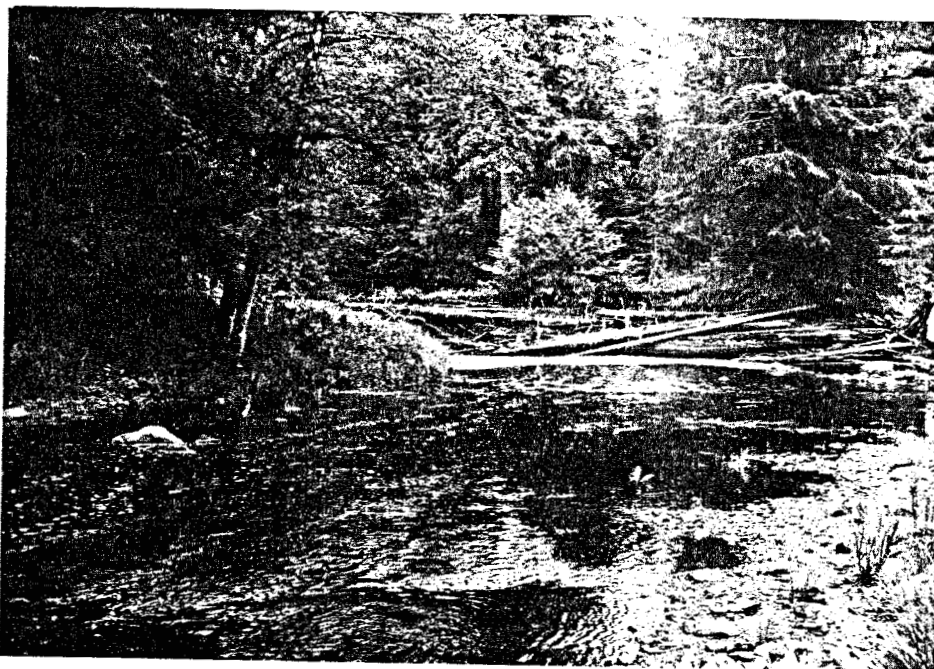
5. 100 m. above the falls.



6. 300 m. above the falls.



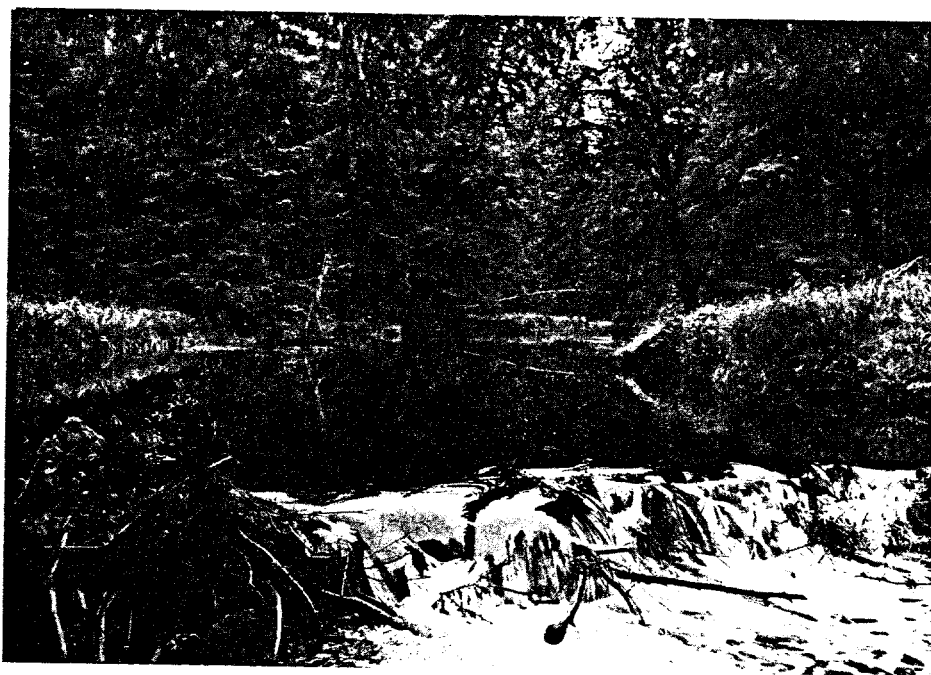
1. Section 2: The influence of the lake was evident in Reach 1.



2. Downstream view of large debris dam in Section 15.



3. Section 16: Reach 2 was characterized by a lack of cover and a large cobble substrate.



4. Section 33: An active beaver dam crosses the stream. Reach 4 beyond the dam was characterized by slow water velocity.



.5. Section 40: Grass and skunk cabbage were frequently observed growing in the streambed in the upper reach.



1. Section 4: Reach 1 continued good quality rearing habitat and ASA.



2. Section 19: The stream enters a V-notch in Reach 3 and both the gradient and substrate size increase.



1. Section 2 Good ASA with excellent rearing area.



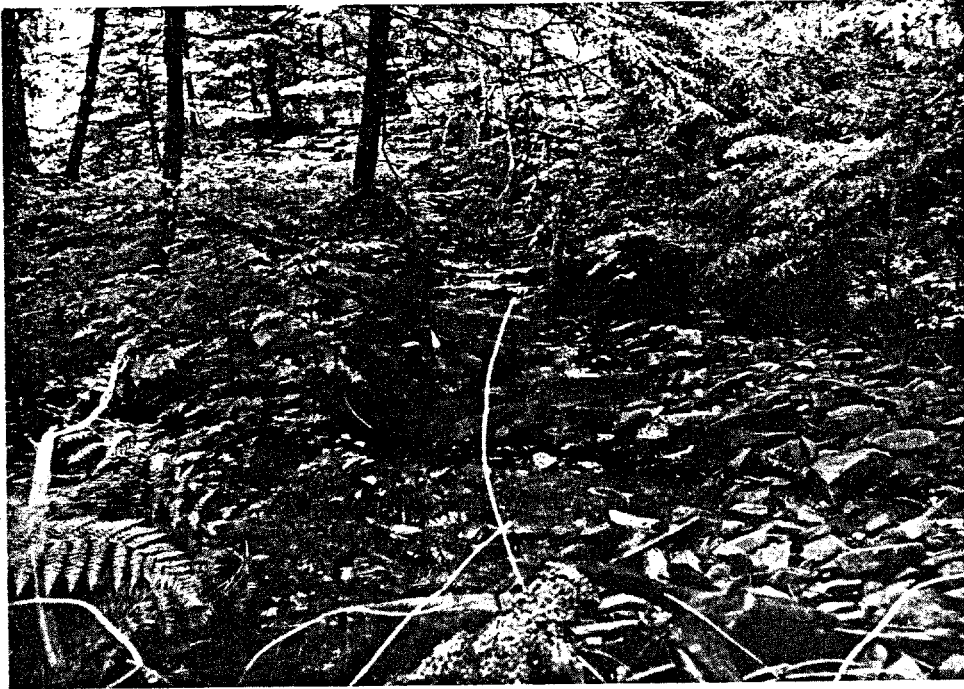
2. Section 14. A few pinks were spawning here but velocity was high.



1. Section 2: Reach 1 contained good rearing habitat and ASA.



2. Reach 2: Contains lower quality ASA and rearing habitat.



3. Only trout were observed above the beaver dam present in Section 21.

101-80-40

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	30	0	0	1	100	6.3	80	504
2	100	38	1	38	2	100	10.5	75	787.5
3	100	16	0	0	3	100	4.8	50	240
4	100	20	0	0	4	100	4	20	80
Total Area "A"				30m	5	100	5.7	10	57
1	100	30	0	0	6	100	3.8	5	19
2	100	25	0	0	7	100	3	5	15
3	100	24	0	0	8	100	7.5	5	37.5
4	100	20	0	0	9	100	5.8	5	29
5	100	20	0	0	Total Area "C"				1,769m ²
6	100	20	0	0					
7	100	16	5	80					
8	100	17	15	255					
9	100	21	15	315					
10	100	8	20	160					
11	100	5	60	300					
12	100	11	40	440					
13	100	13	10	130					
14	100	16	0	0					
15	100	12	10	120					
16	100	7.2	60	432					
17	100	6.8	45	306					
18	100	4.1	20	82					
19	100	9	20	180					
20	100	10	5	50					
21	100	6.5	5	32.5					
22	100	11	0	0					
23	100	6.5	0	0					
24	100	5.4	0	0					
25	100	14	0	0					
26	100	10	0	0					
27	100	9.5	30	285					
28	100	8	5	40					
29	100	17	0	0					
30	100	11	20	220					
31	100	9	20	180					
32	100	16	20	320					
33	100	5.5	10	55					
34	100	6.5	5	32.5					
35	100	8	0	0					
36	100	2.5	0	0					
37	100	7	0	0					
38	100	6.2	0	0					
39	100	7	0	0					
40	100	7	15	105					
41	100	15	5	75					
42	100	6.8	0	0					
47	100	13	50	650					
48	100	11	15	165					
49	100	6.2	0	0					
50	100	11	0	0					
Total Area "B"				5,010 m ²					

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	20	0	0					
2	100	20	0	0					
3	100	22	0	0					
4	100	30	0	0					
5	100	20	0	0					
6	100	20	0	0					
7	100	25	0	0					
8	100	15	0	0					
9	100	17	10	170					
10	100	15	10	150					
11	100	8.8	30	264					
12	100	10	15	150					
13	100	12	1	12					
14	100	14.2	5	71					
15	100	14.8	20	296					
16	100	13	5	65					
17	100	12.8	20	256					
18	100	15.5	10	155					
19	100	12	20	240					
20	100	16	5	80					
21	100	9	25	225					
22	100	12	15	180					
23	100	27	0	0					
24	100	17	0	0					
25	100	10	10	100					
26	100	15	10	150					
27	100	10	0	0					
28	100	6.2	0	0					
29	100	17	0	0					
30	100	19	0	0					
31	100	8.2	0	0					
32	100	11.5	0	0					
33	100	13	0	0					
34	100	13.5	0	0					
35	100	18	0	0					
36	100	13.5	0	0					
37	100	15	0	0					
38	100	16	1	16					
39	100	11.3	1	11.3					
40	100	17.5	1	17.5					
41	100	12.2	1	12.2					
42	100	19.2	1	19.2					
43	100	15	0	0					
44	100	15.1	0	0					
45	100	15.4	1	15.4					
46	100	11	1	11					
47	100	12.5	0	0					
48	100	14.5	1	14.5					
49	100	13	0	0					
50	100	11.5	0	0					
51	100	11	0	0					
Total Area "D"				2,681.1 m ²					

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	3.4	5	17	1	100	6.5	10	65
2	100	4.3	1	4.3	2	100	5.9	15	88.5
3	100	3.3	10	33	3	100	4.5	10	45
4	100	5.5	10	55	4	100	4.3	10	43
5	100	4.1	10	41	5	100	3.4	5	17
6	100	3.9	30	117	6	100	6.4	10	64
7	100	7.0	15	105	7	100	3.6	1	36
8	100	4.6	15	69	8	100	3.9	1	39
9	100	3.3	15	49.5	9	100	4.0	0	0
10	100	3.4	10	34	10	100	3.0	0	0
11	100	2.8	10	28	11	100	2.5	0	0
12	100	3.8	10	38	12	100	1.5	0	0
13	100	5.2	5	26	13	100	2.7	1	2.7
14	100	3.3	1	3.3	14	100	2.6	1	2.6
15	100	3.5	1	3.5	15	100	3.0	0	0
16	100	2.8	1	2.8	16	100	2.0	1	2.0
17	100	2.2	1	2.2	17	100	2.3	20	46
18	100	3.2	1	3.2	18	100	3.9	5	19.6
19	100	2.3	1	2.3	19	100	3.3	1	3.3

Total Area "E" 634.1m²

1	100	5.7	60	342
2	100	5.0	20	100
3	100	6.5	10	65
4	100	3.8	15	57
5	100	1.5	5	7.5
6	100	3.5	5	17.5
7	100	3.0	15	45
8	100	6.0	10	60
9	100	3.4	15	51
10	100	2.5	10	25
11	100	5.0	30	150
12	100	5.2	10	52
13	100	1.8	5	9
14	100	6.2	10	62
15	100	3.1	25	77.5
16	100	3.2	0	0
17	100	4.2	0	0
18	100	3.5	30	105
19	100	2.0	10	20
20	100	2.0	35	70
21	100	13	30	390
22	100	2.5	25	62.5
23	100	3	25	75
24	100	3.8	20	76
25	100	4.3	15	64.5
26	100	2	10	20
27	100	2	5	10
28	100	4.4	1	2
29	100	2	1	2
30	100	3.5	1	3.5

Total Area "F" 2,023.4m²

Total Area "G" 473.6m²

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek - Area A ADF&G No. 101-80-40

1. Section Number	1	2	3	4	5					
2. Channel Type										
3. Riparian Vegetation Class	C-3	C-1	C-1	C-1	C-1					
4. Incision Depth (m)	1	.3	1	1						
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	70	30					
b. rubble				30	30					
c. cobble					30					
d. decomposed organic mat.										
e. gravel					5					
f. sand & silt					5					
6. Bed substrate composition										
a. bedrock or boulder	66	20	60	75						
b. rubble & cobble	27	65	15	10						
c. coarse gravel	5	5	5	5						
d. fine gravel & sand	2	10	20	10						
e. silt-clay deposits										

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek - Area B ADF&G No. 101-80-40

1. Section Number	1	2	3	4	5	6	7	8	9	10
2. Channel Type										
3. Riparian Vegetation Class	C-3	C-3	C-3	C-3	C-3	C-3	C-3	C-6	C-6	C-6
4. Incision Depth (m)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
5. Lower Bank Composition										
a. bedrock or boulder										
b. rubble										
c. cobble										30
d. decomposed organic mat.										
e. gravel										35
f. sand & silt	100	100	100	100	100	100	100	100	100	35
6. Bed substrate composition										
a. bedrock or boulder										
b. rubble & cobble							15	15	15	20
c. coarse gravel					5	25	25	45	45	40
d. fine gravel & sand	100	100	100	100	95	75	60	40	40	40
e. silt-clay deposits										

7. Comments

Section 1: Appears to be a narrow band of C-6 bordered by muskeg. Evidence of old logging - hard to classify.
Section 8: C-6? - Brushy, but no active flooding appears.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek Area B ADF&G No. 101-80-40

1. Section Number	11	12	13	14	15	16	17	18	19	20
2. Channel Type										
3. Riparian Vegetation Class	C-3	C-3	C-3	C-3	C-3	C-3	C-3	C-3	C-3	C-3
4. Incision Depth (m)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
5. Lower Bank Composition										
a. bedrock or boulder		20	10					10	20	38
b. rubble		25	10				10	10	20	30
c. cobble		25	70				70	30	30	30
d. decomposed organic mat.										
e. gravel		20	10				10	30	20	1
f. sand & silt	100	10	10	100	100	100	10	20	10	1
6. Bed substrate composition										
a. bedrock or boulder							5	20	20	40
b. rubble & cobble	30	25	25	15	30	50	60	50	50	40
c. coarse gravel	30	35	25	20	30	30	20	15	15	10
d. fine gravel & sand	40	40	50	65	40	20	15	15	15	10
e. silt-clay deposits										

7. Comments

Section 13: C-6 Right bank
 Section 18: Hemlock becoming dominant, but still see big spruce.
 Section 19: Quite a bit of exposed silt in places in lower bank.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek Area B ADF&G No. 101-80-40

1. Section Number	21	22	23	24	25	26	27	28	29
2. Channel Type									
3. Riparian Vegetation Class	C-1	C-1	C-1	C-1	C-1	C-1	C-1	C-1	C-1
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5
5. Lower Bank Composition									
a. bedrock or boulder	68	70	70	79	90	70	100	40	50
b. rubble	20	20	20	20	10	20		25	40
c. cobble	10	10	10	1		10		25	5
d. decomposed organic mat.									
e. gravel	1							10	5
f. sand & silt	1								
6. Bed substrate composition									
a. bedrock or boulder	50	55	60	60	60	60	35	50	55
b. rubble & cobble	35	30	25	25	25	25	40	30	25
c. coarse gravel	10	10	10	10	10	10	20	15	15
d. fine gravel & sand	5	5	5	5	5	5	5	5	5
e. silt-clay deposits									

7. Comments

Section 22: Left bank C-7 ? - very steep exposed bedrock in places, not very productive looking.

Section 27: C-1 right bank - nice hemlock even though very steep C-5 left.

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek

ADF&G No. 101-80-40

1. Section Number	30	31	32	33	34	35	36	37		
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-1	C-1	C-1	C-5	C-5	C-5	C-5		
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5		
5. Lower Bank Composition										
a. bedrock or boulder	40	100	100	100	100	100	100	100		
b. rubble	50									
c. cobble	8									
d. decomposed organic mat.										
e. gravel	1									
f. sand & silt	1									
6. Bed substrate composition										
a. bedrock or boulder	60	60	60	80	80	85	85	85		
b. rubble & cobble	30	30	30	16	16	11	11	11		
c. coarse gravel	5	5	5	2	2	2	2	2		
d. fine gravel & sand	5	5	5	2	2	2	2	2		
e. silt-clay deposits										
7. Comments										

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek Area B ADF&G No. 101-80-40

1. Section Number	38	39	40	41	42					
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5	C-5					
4. Incision Depth (m)	.5	.5	.5	.5	.5					
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	100	100					
b. rubble										
c. cobble										
d. decomposed organic mat.										
e. gravel										
f. sand & silt										
6. Bed substrate composition										
a. bedrock or boulder	90	90	70	80	85					
b. rubble & cobble	8	8	20	10	5					
c. coarse gravel	1	1	5	5	5					
d. fine gravel & sand	1	1	5	5	5					
e. silt-clay deposits										

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek Area B ADF&G No. 101-80-40

1. Section Number	47	48	49	50						
2. Channel Type										
3. Riparian Vegetation Class	C-5	C-5	C-5	C-5						
4. Incision Depth (m)	.5	.5	.5	.5						
5. Lower Bank Composition										
a. bedrock or boulder	100	100	100	100						
b. rubble										
c. cobble										
d. decomposed organic mat.										
e. gravel										
f. sand & silt										
6. Bed substrate composition										
a. bedrock or boulder	20	60	80	85						
b. rubble & cobble	40	20	5	5						
c. coarse gravel	20	10	5	5						
d. fine gravel & sand	20	10	10	5						
e. silt-clay deposits										

7. Comments

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Wasta Creek Area C ADF&G No. 101-80-40

1. Section Number	1	2	3	4	5	6	7	8	9	
2. Channel Type										
3. Riparian Vegetation Class	C-3	C-6	C-6	C-6	C-6	C-1	C-1	C-7	C-5	
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5	
5. Lower Bank Composition										
a. bedrock or boulder			10	15	10	50	40	100	70	
b. rubble		30	40	40	50	40	50		30	
c. cobble	20	10	30	30	30	10	10			
d. decomposed organic mat.										
e. gravel	30	25	10	10	5					
f. sand & silt	50	35	10	5	5					
6. Bed substrate composition										
a. bedrock or boulder			10	30	60	65	60	60	60	
b. rubble & cobble	45	45	40	45	20	20	25	25	25	
c. coarse gravel	30	30	35	10	15	5	5	5	5	
d. fine gravel & sand	25	25	15	15	5	10	10	10	10	
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A - Wasta Cr ADF&G No. 101-80-40 Date 7/26/84

1. Reach	1	2	2	2	2				
2. Section	1	2	3	4	5				
3. Section Length (m)	100	100	100	100	100				
4. Gradient	3	3	.5	1	1				
5. Water Quality	4	4	4	4	4				
6. Water Width a. channel	37	38	20	26	26				
b. water	30	38	16	20	26				
c. special character	-	1	3	-	-				
7. Water Type % SS	30	65	60	50	50				
SF	60	20	20	45	50				
DS	10	15	20	5					
DF									
8. Undercut Banks (m) left	0	0	0	0	10				
right	0	0	0	0	0				
9. Debris Cover % small	0	T	0	0	0				
large	0	T	0	0	0				
10. Riparian Vegetation %	T	5	T	T	T				
11. Substrate %:									
a. boulders	1	20	30	70	65				
b. cobble	25	60	10	5	15				
c. gravel	3	10	15	10	5				
d. sand	5	5	5	5	10				
e. organic muck	1	5	10	T					
f. bedrock	65		30	10	5				
g. other									
12. ASA	0	0	T	0	0				
13. Gravel Shape	2	2	2	2	2				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100				
b. type	B	B	B	B	B				
15. Average Depth (cm)	20	25	30	30	30				
16. Beaver Activity									
17. Potential Barrier	-	-	-	-	-				
18. Aquatic Vegetation									
a. type	2,3/1	2	1	1/2	1,2/4				
b. density	2/3	1	1	1/3	1/3				
19. Sampling	-	-	-	-	-				
20. Rearing Area	30	90	70	50	50				
21. Comments									

Section 1: Stairstep bedrock falls at start of Section.

Section 2: Stream is slow and very dark in color in this reach. Difficult to distinguish substrate. Trace of large cobble ASA with sand at start of Section - poor quality - some braiding present.

Section 3: Dry channel from right bank, re-enters in Section 4. Stream splits into two channels around an island. Left channel is 15 m. wide, right channel is 20m. Fontinalis moss present. Good rearing is provided due to amount of dark slow flow. Little debris or undercut banks or overhanging riparian vegetation provided however.

Section 5: Survey discontinued after Section 5. The water gets very deep and it is difficult to observe the stream bottom. The habitat becomes very much like a lake.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B - Wasta Cr ADF&G No. 101-80-40 Date 7/26/84

1. Reach	1	1	1	1	1	1	1	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	.25	.25	.25	.25	.25	.25	.25	.5	.5
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. channel	30	25	24	22	22	20	20	19	21
b. water	30	25	24	20	20	20	16	17	21
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS					40	60	40	40	30
SF								25	30
DS	100	100	100	100	60	40	60	35	40
DF									
8. Undercut Banks (m) left	10	10	20	0	T	T	0	15	T
right	30	10	20	20	T	T	15	0	T
9. Debris Cover % small	T	T	T	1	T	T	1	1	3
large	T	T	2	1	T	T	1	1	10
10. Riparian Vegetation %	T	T	T	5	10	5	T	5	T
11. Substrate %:									
a. boulders									
b. cobble							15	15	15
c. gravel			10	15	20	40	40	60	65
d. sand	100	100	90	85	80	60	45	20	20
e. organic muck									
f. bedrock									
g. other									
12. ASA	0	0	0	0	0	0	5	15	15
13. Gravel Shape	-	-	3	3	3	3	3	3	3
14. Streambank Vegetation									
a. percentage	100	100	100	50/50	100	100	100	50/50	50/50
b. type	B	B	B	A/B	B	B	B	B/C	B/C
15. Average Depth (cm)	130	130	130	130	130	90	30	30	30
16. Beaver Activity	6	6	6	6	6	6	6	6	6
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1,3/4	1,3/4	1-4	1-4	23/1,4	23/1,4	23/1,4	13/2,4	13/4
b. density	2/3	2/3	3	3	2/3	2/3	2/3	2/3	2/3
19. Sampling	-	-	-	-	-	-	Y	-	-
20. Rearing Area	100	100	100	100	100	100	100	75	65
21. Comments									

Section 1: Reach is dark, deep and slow. No apparent water velocity. Lily pads and vascular plants along bank in lower half of Section.

Section 2: Hand logging evidence along banks. Many trout observed feeding.

Section 3: Beaver dam area to left of stream at start of Section. Although all of stream is rearing area, it is not high quality due to the lack of debris and riffles. Rearing coho observed. Pea-sized gravel mixed with the sand.

Section 4: Rearing coho observed with regularity.

Section 5: Many trout fry observed.

Section 6: Algae covers all the gravel. Fontinalis moss present the last 15 m.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 7: Good numbers of trout fry observed. Some possible ASA present in riffle area at the start of the Section. Fifty percent sand underneath the top layer of gravel. Poor quality ASA overall.

Section 8: The stream turns into visibly moving water with riffles. The rearing habitat quality improves with more stream diversity and debris present. Some loose gravel with a high proportion of sand in the first 50 m.

Section 9: Good riffle.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B-Wasta Cr. ADF&G No. 101-80-40 Date 7/26/84

1. Reach	2	2	2	2	3	3	4	4	5
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	.5	.75	.75	.75	.75	.75	1	1.25	3
5. Water Quality	4	4	4	4	4	4	3	3	3
6. Water Width									
a. channel	19	16	22	18	16	12	11.5	10	10
b. water	8	5	11	13	16	12	7.2	6.8	4.1
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type %									
SS	30	30	30	60	30	50	30	30	30
SF	30	70	70	20	7	25	65	70	70
DS	40			20	70	25	5		
DF									
8. Undercut Banks (m)									
left	0	T	10	10	70	30	15	10	10
right	T	0	0	0	70	30	15	10	10
9. Debris Cover %									
small	1	T	T	3	1	2	1	1	1
large	3	T	1	5	5	10	10	5	10
10. Riparian Vegetation %	5	5	T	5	5	5	10	10	15
11. Substrate %:									
a. boulders								5	20
b. cobble	20	30	25	25	15	30	50	60	50
c. gravel	60	60	65	50	45	55	40	30	25
d. sand	20	10	10	25	40	15	10	5	5
e. organic muck									
f. bedrock									
g. other									
12. ASA	20	60	40	10	0	10	60	45	20
13. Gravel Shape	3	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
14. Streambank Vegetation									
a. percentage	50/50	50/50	100	100	100	100	100	100	100
b. type	B/C	B/C	B	B	B	B	B	A	A
15. Average Depth (cm)	15	135	15	25	30	30	8	10	15
16. Beaver Activity	6	6	6	6	2	6	6	6	6
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3/2	3/2	2,3/1	2,3/1	2,3/1	2,3/1	3/2	3/2,1	3/2
b. density	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/3	1/2
19. Sampling	-	-	-	-	Y	-	-	-	-
20. Rearing Area	70	35	50	75	80	75	40	30	30
21. Comments									

Section 10: Many small trout fry observed. Exposed sand on cut right bank, some good clean gravel.

Section 11: Many trout fry observed near stream edges. Good loose gravel-cobble mix.

Section 12: Logging sign along banks no longer evident. Poor quality ASA, compact but usable.

Section 13: Stream forks at start of Section. Right fork surveyed as Area C. Area B continues as left fork. Very little riffle present. Substrate is compact with sand present.

Section 14: Large active beaver dam across stream 30 m. into Section. Rearing fish observed above dam.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 15: Twenty five meters into Section tributary enters from left bank. Beaver dams continue up this tributary. The water continues dark and deep up the tributary. Substrate appears to be organic muck. Rearing fish were observed. A reconnaissance by helicopter on 9/4/84 was made of the tributary above the beaver pond area. A stretch of fair ASA and good rearing habitat was found to exist. A few PS were utilizing the area.

Section 16: The mainstem returns to habitat similar to reach #2 in Sections 8 through 15 before the beaver dam. Good ASA and rearing habitat are present. Rearing coho observed in good numbers. Substrate is small cobble - gravel. Substrate is not exceptionally loose but good water flow.

Section 17: High water channel to left. Just a trickle of water present but many rearing coho present. The stream enters from a flood plain with multiple channels present. All have rearing coho and would have some ASA at higher water levels. Substrate contains more large cobble.

Section 18: Gradient and substrate size increase in this reach. Boulders and large cobble predominate.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B Wasta Crk ADF&G No. 101-80-40

Date 7/26/84

1. Reach	5	5	6	6	6	6	6	6	6
2. Section	19	20	21	22	23	24	25	26	27
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2.5	.75	2	2	2	2	2	3	2.5
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	11	26	15	17	14	10	16	18	16
b. water	9	10	6.5	11	6.5	5.4	14	10	9.5
c. special character	1	1	1	-	-	-	-	-	-
7. Water Type % SS	20	25	25	25	20	25	20	20	15
SF	70	60	75	75	75	75	80	75	65
DS	10	15						5	10
DF					5				10
8. Undercut Banks (m) left	10	0	0	0	0	0	0	5	T
right	10	0	0	0	0	0	0	0	0
9. Debris Cover % small	2	5	0	0	0	0	0	0	T
large	10	20	T	T	T	T	T	T	5
10. Riparian Vegetation %	30	5	T	T	T	T	T	T	0
11. Substrate %:									
a. boulders	20	40	50	55	50	50	60	60	35
b. cobble	50	40	35	30	25	25	25	25	40
c. gravel	25	15	15	15	15	15	15	15	25
d. sand	5	5							
e. organic muck									
f. bedrock									
g. other									
12. ASA	20	5	5	0	0	0	0	0	30
13. Gravel Shape	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	A	A	B	B	B	B	B	B	B
15. Average Depth (cm)	10	40	30	10	20	100	10	15	20
16. Beaver Activity	6	5	6	5	5	5	5	5	5
17. Potential Activity	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3/2	3/2	3/2	3/2	3/2	3/2/1	3/2/1	3/2/1	3/2/1
b. density	1/2	1/2	1/2	1/2	1/2	1/2/3	1/2/3	1/2/3	1/3
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	30	50	25	25	25	25	20	20	30
21. Comments									

Section 19: Marked decrease in number of rearing fish observed.

Section 20: Large dry channel to right. It appears the entire stream has changed its course from the channel to the right to the left channel. The right channel is now a flood channel. A large log jam is present.

Section 21: Very poor quality rearing habitat and little ASA in this reach. Little debris, undercut bank or any type of diversity present. Left upper bank gets steep 90% gradient, with exposed bedrock in places. Braiding ends.

Section 22: Right banks gets steep also.

Section 23: Signs of instability on steep upper right bank.

Section 24: Upper banks still have 70-80% gradient but not as much exposed bedrock present. Fractured bedrock along right bank. Rearing coho observed infrequently.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 26: Slides and blowdown on upper right bank.

Section 27: Exposed soil on left bank from slide. Large log jam across stream. Potential difficult obstacle for fish passage. Left bank becomes a rock cliff. Some usable gravel and cobble in riffle area above the log jam but substrate not very loose.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B Wasta Crk ADF&G No. 101-80-40

Date 7/26/84

1. Reach	6	6						
2. Section	28	29						
3. Section Length (m)	100	100						
4. Gradient	2	2						
5. Water Quality	3	3						
6. Water Width a. channel	14	17						
b. water	8	17						
c. special character	-	-						
7. Water Type % SS	20	25						
SF	80	70						
DS		5						
DF								
8. Undercut Banks (m) left	0	0						
right	0	0						
9. Debris Cover % small	0	0						
large	1	1						
10. Riparian Vegetation %	1	1						
11. Substrate %:								
a. boulders	50	55						
b. cobble	30	25						
c. gravel	20	20						
d. sand								
e. organic muck								
f. bedrock								
g. other								
12. ASA	5	0						
13. Gravel Shape	2	2						
14. Streambank Vegetation								
a. percentage	100	100						
b. type	B	B						
15. Average Depth (cm)	10	8						
16. Beaver Activity	5	5						
17. Potential Barrier	-	-						
18. Aquatic Vegetation								
a. type	3/2,1	3/2,1						
b. density	1/3	1/3						
19. Sampling	-	-						
20. Rearing Area	20	30						
21. Comments								

Section 28: Substrate mostly boulder and large cobble.

Section 29: Rearing coho infrequently observed. A .08 m³/sec tributary enters from the left bank at the end of the Section. The gradient is a steady 5% and it enters a V-notch. Rearing coho observed in fair numbers. Substrate primarily boulders and large cobble. The little ASA present is poor quality due to the substrate size.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B Wasta Crk ADF&G No. 101-80-40 Date 8/19/84

1. Reach	6	6	6	6	7	7	7	7	7
2. Section	30	31	32	33	34	35	36	37	38
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	1.5	2	2.5	2.5	6	7	6	6.5	3.5
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	14	14	16	10.5	8.5	12	10	11	8.2
b. water	11	9	16	5.5	6.5	8	2.5	7	6.2
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	20	20	15	10	10	5	5	5	5
SF	80	80	85	80	70	85	85	80	80
DS				5	10	5	5	5	5
DF				5	10	5	5	10	10
8. Undercut Banks (m) left	0	0	0	0	0	0	0	0	0
right	0	0	0	0	0	0	0	0	0
9. Debris Cover % small	0	0	0	0	0	0	0	0	0
large	1	1	1	1	1	1	1	0	1
10. Riparian Vegetation %	1	1	T	1	0	0	0	0	0
11. Substrate %:									
a. boulders	60	60	65	20	50	50	45	45	30
b. cobble	30	30	25	16	16	11	11	11	8
c. gravel	10	10	10	4	4	4	4	4	2
d. sand									
e. organic muck									
f. bedrock				60	30	35	40	40	60
g. other									
12. ASA	20	20	20	10	5	0	0	0	0
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	50/50	100	100	100	70/30	90/10	100	80/20	100
b. type	B/D	D	B	B	B/D	B/D	B	B/D	B
15. Average Depth (cm)	15	20	10	35	30	60	40	30	30
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	2	-	-	-
18. Aquatic Vegetation									
a. type	3/2,1	3/2,1	3/2,1	3/2,1	3/1,2	3/1,2	3/1,2	3/1,2	3/1,2
b. density	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3
19. Sampling	Y	-	-	-	-	-	-	-	-
20. Rearing Area	20	20	15	15	15	15	10	15	15

21. Comments

Section 30: Slides with exposed soil on the left upper bank indicate instability. Adult PS are present in good numbers although the ASA is not good quality. The substrate is primarily compact large cobble and boulders. There is very little cover provided and the rearing habitat is consequently lacking in quantity and quality. Boulders provide the only cover and few rearing fish were observed.

Section 31: Both of the steep upper banks show indications of instability.

Section 32: A small tributary enters from the steep upper left bank at the end of the Section.

Section 33: A large deep pool area is present. The gradient increases and the substrate

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 33, continued: turns to bedrock and large boulders.

Section 34: A few adult PS are still present in pools.

Section 35: A stump is present on the left bank. The rearing area is still poor quality due to the lack of cover and pools areas. A 3.5 m. barrier falls with a gradient of 45% over bedrock is present 85 m. into the Section.

Section 38: Thirty meters into the Section a bedrock formation forms a possible barrier 2.5 m. falls on the left side of the channel and a 1 m. stairstep falls on the right side.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B Wasta Crk ADF&G No. 101-80-40 Date 9/19/84

1. Reach	7	8	8	8	8	8	8	8
2. Section	39	40	41	42	47	48	49	50
3. Section Length (m)	100	100	100	100	100	100	100	100
4. Gradient	4	1.5	1.5	3	.25	.25	1.5	2.5
5. Water Quality	3							
6. Water Width a. channel	10	12	15	10	14.5	13.5	11.2	12
b. water	7	7	15	6.8	13	11	6.2	11
c. special character	-	-	-	-	-	-	-	-
7. Water Type % SS	5	15	10	15	15	10	15	15
SF	80	80	90	80	85	90	85	85
DS	5							
DF	10	5		5				
8. Undercut Banks (m) left	0	5	0	0	0	0	0	0
right	0	5	0	0	0	0	0	0
9. Debris Cover % small	0	0	0	0	0	0	0	0
large	0	0	0	0	1	1	0	0
10. Riparian Vegetation %	0	1	0	0	2	0	0	0
11. Substrate %:								
a. boulders	40	60	65	25	10	20	10	10
b. cobble	8	20	10	5	40	20	5	5
c. gravel	2	10	10	10	30	15	10	5
d. sand					10	5	5	5
e. organic muck								
f. bedrock	50	10	15	60	10	40	70	75
g. other								
12. ASA	0	15	5	0	50	15	0	0
13. Gravel Shape	2	2	2	2	2	2	2	2
14. Streambank Vegetation								
a. percentage	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B
15. Average Depth (cm)	50	50	10	40	10	10	30	30
16. Beaver Activity	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-
18. Aquatic Vegetation								
a. type	3,1/2	3/1,2	3/1,2	3/1	1/3	1/3	1/3	1/3
b. density	2/3	2/3	2/3	2/1	1/2	1/2	1/2	1/2
19. Sampling	-	Y	-	-	-	-	-	-
20. Rearing Area	10	15	10	10	75	75	75	20
21. Comments								

Section 40: The gradient and the substrate size decreased. The upper banks flatten out to a 25 to 30% gradient. The rearing quality is still not good quality due to the lack of cover. There is essentially no large debris, undercut banks or overhanging vegetation. Rearing trout are occasionally observed.

Section 42: The upper banks began to get steep once more in this Section. The survey was discontinued at this point since there was little fisheries potential. A reconnaissance above this point found an extremely long stretch with a low gradient as well as limited ASA and rearing habitat. The gradient decreased to .75% 100 m. beyond the end of Section 42 and the substrate turned to gravel and small cobble. The next

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 42, continued: 300 m. contained 3000 m² of possible ASA. The ASA was good quality but deteriorated the further upstream the reconnaissance continued. Moderate amounts of silt were present and the compactness and amount of sand increased. The rearing habitat was still lacking any type of cover.

Section 47: Section 47 was started 400 m. beyond the end of Section 42. Only a reconnaissance was done to a stretch of stream of approximately equal in length to Sections 43 to 46, as explained previously. Flagging and a USFS hydrology marker were present on the right bank at the start of Section 47. The growth of moss on the substrate is now dense on all substrate materials.

Section 48: The incidence of rearing trout observed increased in this Section.

Section 49: Bedrock once more becomes the dominant substrate.

Section 50: The measured survey was once more discontinued at the end of the Section. The gradient decreases to .5% and the substrate becomes primarily sand and cobble with little, if any, ASA. A heavy moss and algae growth is present and the only ASA is found in patches. The rearing habitat is good quality due to the increased amount of pool area and debris present. About 200 m. beyond the end of Section 50, a .1 m³/sec tributary enters from the right bank. Limited poor quality ASA is available near the mouth of the tributary, but little ASA or rearing habitat is provided beyond above there. The mainstem continues at a gradient of .25% for 400 more meters. The water is deep and slow and provides excellent rearing habitat. The substrate is almost totally fine gravel and sand and no ASA is provided due to the substrate and sluggish water velocity. Fresh beaver sign was observed on the banks. Boulders and bedrock become evident at the end of the 300 m. and the ASA remains minimal at best.

A reconnaissance was done at a site approximately 800 m. further up stream on Sept. 4, 1984. The stream was 15 m. in width and deep and dark. Beaver sign was abundant. The rearing habitat was good quality, but there appeared to be no ASA. The water was too deep to determine the substrate composition. Further reconnaissance by helicopter found that this type of habitat appeared to continue for about 3/4 of a mile before the stream made a sharp turn to the west and the gradient increased and whitewater became evident. Patches of gravel bars were observed before downstream of the sharp turn and ASA may be present.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Wasta Creek Area C ADF&G No. 101-80-40 Date 8/19/84

1. Reach	1	1	1	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	.5	2	1	1.25	4	2	2.75	2.5	4
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width									
a. channel	14	15.6	4.8	12.5	5.7	7.5	18	8.5	6.8
b. water	6.3	10.6	4.8	4	5.7	3.8	3	7.5	5.8
c. special character	1	1	1	1	1	1	1	1	1
7. Water Type %									
SS	30	20	15	15	15	15	20	15	15
SF	60	75	85	85	85	85	80	85	85
DS	10	5							
DF									
8. Undercut Banks (m)									
left	10	2	10	5	1	1	0	0	0
right	10	0	0	1	1	1	0	0	0
9. Debris Cover %									
small	1	0	2	2	0	1	1	1	2
large	10	5	8	5	1	5	8	5	8
10. Riparian Vegetation %	5	1	40	20	15	10	3	1	1
11. Substrate %:									
a. boulders			10	30	60	60	55	50	55
b. cobble	45	45	40	45	20	20	25	25	25
c. gravel	40	40	35	15	15	10	10	10	10
d. sand	15	15	15	10	5	5	5	5	5
e. organic muck									
f. bedrock						5	5	10	5
g. other									
12. ASA	80	75	50	20	10	5	5	5	5
13. Gravel Shape	2/3	2/3	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	50/50	100	100	100	100
b. type	A	A	A	A	A/B	B	B	B	B
15. Average Depth (cm)	10	8	5	10	10	10	10	8	10
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	2
18. Aquatic Vegetation									
a. type	3/1	3/1	3/1	3/1	3/1	3/1	3/1,2	3/1,2	3/1,2
b. density	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
19. Sampling	-	-	-	-	-	Y	-	-	-
20. Rearing Area	25	25	15	15	15	15	20	15	15
21. Comments									

Section 1: Silt is present on the substrate in slow moving areas at the start of the Section. Most of the Section is a shallow riffle with good numbers of spawning PS present. There is not much rearing habitat available due to the limited pool and debris areas. The rearing habitat that is available however, is good quality and rearing coho are abundant.

Section 2: The stream forks into two channels 60 m. into the Section. The left channel is several hundred meters long and joins Area B between Sections 16 and 20 in this severely braided area. Many spawning PS and CS are utilizing this braided area between Area B and C. Excellent rearing habitat is also provided in this area. The right fork continues to be surveyed as Area C.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 3: Area C continues to braid, but does not connect to Area B any longer.

Spawning PS were decreasing in abundance in Section 3. Rearing coho were still observed with regularity. The flow at this point was estimated at $.2 \text{ m}^3/\text{sec}$.

Section 5: The substrate is larger and is flat to angular shaped. Much more boulder and large cobble is present. Only occasional adult PS were observed. The gradient increases and the amount of debris available for rearing habitat decreases. The quality of the rearing decreases accordingly and fewer rearing coho were observed.

Section 6: The stream braids into two channels 50 m. into the Section. The channels rejoin 30 m. into Section 7. The upper right bank has a gradient of 80% and signs of slumping are present. Patches of bedrock are present along the right bank. The left upper bank gradient increases to 150%.

Section 7: Only occasional rearing coho and trout were observed.

Section 8: The upper banks continue to be very steep. The left upper bank is mainly bedrock.

Section 9: A few adult PS were still present in pool areas. A 17 m., near vertical, barrier falls is at the end of the Section. Immediately above the falls is a 20 m. bedrock chute with a 20% gradient. The gradient is between 3 and 5% for the next 250 m. and the substrate turns from bedrock to mainly boulders. Very little if any, ASA or rearing area is available, there being no cut banks or debris to provide cover in the uniformly shallow swift stream. The gradient decreases to 2% and the upper banks flatten out. The substrate is very compact large cobble and boulders. A relatively fresh beaver cutting was observed. No rearing fish were observed.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area D - Wasta Creek ADF&G NO. 101-80-40 Date 6-20-84

1. Reach	1	1	1	1	1	1	1	1	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	1	1	1	1	1	1	1	1	1.5
5. Water Quality	4	4	4	4	4	4	4	4	3
6. Water Width									
a. Channel	20	20	22	30	20	20	25	15	40
b. water	20	20	22	30	20	20	25	15	17
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type %									
SS									
SF									
DS	100	100	100	100	100	100	100	100	95
DF									
8. Undercut Banks (m)									
left	50	50	50	50	50	50	50	50	10
right	50	50	50	50	50	50	50	50	10
9. Debris Cover %									
small								1	0
large								2	1
10. Riparian Vegetation %	5	5	5	5	5	5	5	5	5
11. Substrate %:									
a. boulders									10
b. cobble									20
c. gravel									50
d. sand									20
e. organic muck									
f. bedrock									
g. other									
12. ASA	0	0	0	0	0	0	0	0	10
13. Gravel Shape									2
14. Streambank Vegetation	100	100	100	100	100	100	100	100	100
a. percentage									
b. type	C	B	B	B	B	B	B	B	B
15. Average Depth (cm)								75	35
16. Beaver activity	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type									1,2/3
b. density									2/1
19. Sampling	-	-	-	-	-	-	-	-	Y
20. Rearing Area	100	100	100	100	100	100	100	100	100
21. Comments									

The water is too deep and dark to accurately determine aquatic vegetation debris, substrate composition or average depth in Sections 1 through 8. Evidence of handlogging is observed on both banks up to Section 22 where steep bedrock upper banks begin. The water temperature and pH were 12⁰ and 6.5 respectively. The flow was estimated at 1m³/sec.

Section 7: Bottom appears to be organic muck and or sand in the few places that substrate can be observed.

Section 8: Some gravel appearing on bottom

Section 9: Small tributary with a flow estimated at .015 m³/sec enters from right bank. The water temperature is 10⁰C and the pH is 5. Many coho fry observed at mouth and for a short distance up tributary. No ASA is present and the stream goes into a muskeg and beaver dam area.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

1st lake up

Stream Name Area D - Wasta Creek ADF&G NO. 101-80-40 Date 6/20/84

1. Reach	2	2	2	2	2	2	2	2	2
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	2.5	2.5	2.5	2	2	2	2	2
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. Channel	15	12	13.4	12	15.2	16	13	13.8	15.5
b. water	15	8.8	10	12	14.2	14.8	13	12.8	15.5
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	20	20	15	15	80	90	80	90	85
SF	75	70	45	75			20	5	15
DS	5	10	40	10	20	10		5	
DF									
8. Undercut Banks (m) left	10	15	15	0	0	15	5	0	30
right	10	0	25	5	0	5	5	5	0
9. Debris Cover % small	0	0	5	0	0	0	0	0	0
large	1	0	15	0	0	0	0	0	0
10. Riparian Vegetation %	5	5	10	10	10	10	5	5	5
11. Substrate %: a. boulders	15	1	1	20	20	20	20	20	20
b. cobble	20	45	60	59	35	35	35	35	35
c. gravel	40	49	40	15	35	35	35	35	35
d. sand	25	5		5	10	10	10	10	10
e. organic muck									
f. bedrock				1					
g. other									
12. ASA	10	30	15	1	5	20	5	20	10
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	80/20	100	100	100	100	100	100
b. type	B	B	B/C	B	B	B	B	B	B
15. Average Depth (cm)	60	25	10	12	17	22	15	10	12
16. Beaver activity	6/7	7	7	7	7	7	7	7	7
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1,2/3	2/3	1,3	1/3	1/3	1/3	1,3/2,4	1,3/2,4	1,3/2,4
b. density	2/1	2/1	2/1	2/1	2/1	2/1	2/3	2/3	2/3
19. Sampling	-	-	Y	-	-	-	-	-	-
20. Rearing Area	30	20	15	10	90	70	50	50	50
21. Comments									

Section 10: Fontinalis moss present. A tributary enters from the right bank at end of section. Tributary surveyed as Section E.

Section 11-20: Green algae and vascular plants (grasses and skunk cabbage) were present throughout this reach sparsely. The stream has little canopy cover in this stretch. Rearing coho were observed with regularity, although not in great density. The water color and aquatic vegetation made observation of rearing fish difficult.

Section 11: ASA has moderate cover of filamentous algae and of questionable quality.

Section 12: Large inactive beaver dam area on left bank. A small tributary enters from this area. Rearing coho were observed in and above the beaver dam area. A dead 80 mm coho was also found. The inlet stream above the beaver dam contains only trace amounts

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM cont.

Section 12, continued: of ASA but does provide good rearing habitat. A large debris dam is present in the mainstem. It may not be a barrier but at the present normal flow it could be a hinderance to adult salmon migration. At high flows an overflow channel to the left exists.

Section 15: Moss growth is heavy the first 50 meters. ASA substrate in this reach is very loose cobble covered by a heavy growth of moss in places. Grass growing in stream may indicate low flows at times. The quality of the ASA is questionable due to the aquatic vegetation growth and the marginal water velocity. The large cobble substrate is very loose. A survey when salmon are in the stream would be necessary to determine if the ASA is used or not.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area D - Wasta Creek ADF&G NO. 101-80-40 Date 6/20 - 6/21/84

1. Reach	2	2	2	2	3	3	3	3	3
2. Section	19	20	21	22	23	24	25	26	27
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	2	1	1	1.5	1.5	1	1	1
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. Channel	13.4	16.5	15	15	27	18	10	15	2.0
b. water	12	16	9	12	27	17	10	15	10
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	85	40	15	25	15	25	50	35	30
SF	15	60	85	75	85	75	50	60	70
DS							5		
DF									
8. Undercut Banks (m) left	30	5	0	20	0	0	5	10	1
right	10	5	0	0	0	0	0	20	1
9. Debris Cover % small	0	0	0	0	0	0	0	0	0
large	1	0	0	0	0	1	0	0	0
10. Riparian Vegetation %	10	10	1	1	5	1	0	0	0
11. Substrate %: a. boulders	10	30	20	20	40	35	35	30	15
b. cobble	40	35	40	40	15	20	25	30	15
c. gravel	40	30	30	30	10	10	20	25	10
d. sand	10	5	10	10	10	10	15	10	10
e. organic muck									
f. bedrock					25	25	5	5	50
g. other									
12. ASA	20	5	25	15	0	0	10	10	0
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	13	12	13	20	30	25	25	36	20
16. Beaver activity	7	7	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3/1,2,4	3/1,2,4	1/2,4	1/4	1	1/4	1/4	1/2,4	1/4
b. density	1/3	1/3	2/3	1/3	1	1/3	1/3	2/3	1/3
19. Sampling									
20. Rearing Area	50	30	30	50	50	50	50	50	40
21. Comments									

Section 19: Icing sign present on snag that is across the stream.

Section 21: Section 21-32' were surveyed on 6/21/84. The water temperature was 11°C.

Section 22-32: This reach is a uniform stretch with large areas of bedrock and little ASA. The rearing habitat also is not high quality due to the lack of good cover.

Steep upper banks of bedrock are present.

Section 23: Stumps from handlogging are no longer observed on upper banks.

Section 24: Fontinalis moss present.

Section 26: A cottid was observed.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area D - Wasta Creek ADF&G NO. 101-80-40 Date 6/21 - 7/8/84

1. Reach	3	3	3	3	3	4	3	3	4
2. Section	28	29	30	31	32	33	34	35	36
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3.5	.5	.5	.75	.5	1.5	1.5	2	2
5. Water Quality	3	3	3	3	3	4	4	4	4
6. Water Width a. Channel	8.2	17	20	10	13.5	13	13.5	18	13.5
b. water	6.2	17	19	8.2	11.5	13	13.5	18	13.5
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	30	40	90	20	20			10	
SF	60	60	10	79	65				
DS	10			1	15	100	100	90	100
DF									
8. Undercut Banks (m) left	0	5	20	10	10	10	10	50	20
right	10	5	10	10	10	50	30	30	50
9. Debris Cover % small	0	0	0	0	0	0	0	0	1
large	0	0	0	1	1	0	0	3	3
10. Riparian Vegetation %	0	0	0	5	1	5	5	5	5
11. Substrate %: a. boulders	50	10	50	30	20				
b. cobble	20	10	25	25	30				
c. gravel	15	10	10	15	30				
d. sand	10	10	10	10	15				
e. organic muck									
f. bedrock	5	60	5	20	5				
g. other									
12. ASA	0	0	0	0	0	0	0	0	0
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	41	10	15	15	30	45	80	75	65
16. Beaver activity	6	6	6	5	6	1	1	1	1
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1/2,4	1/2	1/2,4	1/2,4	1/2,4	4	4	4	4
b. density	1/3	1/3	2/3	1/3	2/3	3	3	3	2
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	60	50	60	50	50	50	50	50	50
21. Comments									

Section 28-29: Fontinalis moss is present

Section 30: Bedrock occurrence decreases but there is no increase in the amount of ASA present.

Section 31: Heavy Fontinalis growth on substrate

Section 32: Tributary enters from the left bank at the end of the section. The tributary is surveyed as Area F.

Section 33: Section begins at a large active beaver dam that crosses the entire system. Dam .5 meters high on the downstream side. Substrate composition cannot be determined due to the depth and dark color of the water. The average depth, aquatic vegetation and debris were also difficult to accurately determine. This reach has a lack of canopy cover, debris or cut banks for rearing. The dark water and aquatic vegetation provide protection, however.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 34: Many recent beaver haulouts observed.

Section 35: Grass is growing midstream with great vigor in places.

Section 36: A tributary enters from the right bank 30 meters into the section.
The tributary is surveyed as Area G.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area D - Wasta Creek ADF&G NO. 101-80-40 Date 7/8/84

1. Reach	4	4	4	4	4	4	4	4	4
2. Section	37	38	39	40	41	42	43	44	45
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	2	2	2	2	2	2	2	2
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. Channel	15	16	11.3	18	12.2	20	15	15	16
b. water	15	16	11.3	17.5	12.2	19.2	15	15	15.4
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS		5	15	70	70	80	85	90	85
SF		5	35	25	25	15	10	10	15
DS	100	90	50	5	5	5	5		
DF									
8. Undercut Banks (m) left	30	20	10	30	20	0	5	0	0
right	30	20	10	0	10	20	10	0	0
9. Debris Cover % small	5	1	1	0	0	0	0	0	0
large	15	2	0	1	1	1	1	0	1
10. Riparian Vegetation %	5	5	5	5	5	5	5	5	5
11. Substrate %: a. boulders		1	10	25	30	40	35	40	40
b. cobble		40	69	59	55	40	40	25	35
c. gravel		10	1	1	5	5	10	5	5
d. sand		49	20	15	10	15	15	30	20
e. organic muck									
f. bedrock									
g. other									
12. ASA	0	1	1	1	1	1	0	0	1
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	80	70	50	35	20	15	25	25	30
16. Beaver activity	1	1	1	1	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	4	4	1-4	1-4	1-4	1-4	1-4	1-4	1-3/4
b. density	2	2	1	1	1	1	1	1	1/2
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	50	50	50	50	50	50	50	50	50
21. Comments									

Section 38: Stream shallows up enough for wading and substrate observation. Found a dead cutthroat (150 mm). Skunk cabbage and grass are growing in moderate density in the stream through this reach.

Section 39: ASA is not good quality. It is found only in patches and has a covering of algae. Green algae, moss and vascular plants are dense in places.

Section 44: Skunk cabbage and grasses growing midstream. Moss and algae are also dense.

Section 45: A .03 m³.sec tributary enters from the left bank. No ASA is available. The substrate is primarily large cobble and moss covered boulders. Little rearing habitat is available either. Gradient increases to 10% 200 meters up the tributary.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area D - Wasta Creek ADF&G NO. 101-80-40 Date 7/8/84

1. Reach	4	4	4	4	4	4	4	4	4
2. Section	46	47	48	49	50	51	52	53	54
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2	2	2	2	2	2	2	2	2
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. Channel	11	13	14.5	13	11.5	9.8	11		
b. water	11	12.5	14.5	14	11.5	9.8	11		
c. special character	-	-	-	-	-	-	-		
7. Water Type % SS	85	75	70	80	75	70	50		
SF	15	25	30	20	20	25			
DS					50	5	50		
DF									
8. Undercut Banks (m) left	5	0	0	0	0	0	0		
right	10	0	0	0	0	0	0		
9. Debris Cover % small	0	0	0	0	0	0	0		
large	0	1	1	1	3	3	1		
10. Riparian Vegetation %	5	5	5	5	5	5	5		
11. Substrate %: a. boulders	30	25	20	25	35	35			
b. cobble	40	60	60	60	50	50			
c. gravel	10	5	10	5	5	5			
d. sand	20	10	10	10	10	10			
e. organic muck									
f. bedrock									
g. other									
12. ASA	1	0	1	0	0	0	0		
13. Gravel Shape	2	2	2	2	2	2	2		
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100		
b. type	B	B	B	B	B	B	B		
15. Average Depth (cm)	30	20	15	12	15	10	20		
16. Beaver activity	5	5	7	5	5	5	5		
17. Potential Barrier	-	-	-	-	-	-	-		
18. Aquatic Vegetation									
a. type	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4	1-4	1-4		
b. density	1/2	1/2	1/2	1/2	1/2	1	1		
19. Sampling	-	-	-	-	-	-	-		
20. Rearing Area	50	50	50	50	50	50	50		
21. Comments									

Section 46: Muskeg is visible on the upper right bank.
 Section 52: The streams is too deep to determine substrate composition. The section ends in the outlet of a lake. Rearing coho have been observed the entire reach. The dark color of the water and heavy aquatic growth made observation of rearing fish difficult. A reconnaissance by helicopter on 9/4/84 found two tributaries to the upper lake. The tributary to the south appeared to have little fisheries potential. The gradient was steep and the substrate was boulders. The tributary to the north was in flood stage which made surveying difficult. The flow was estimated at $.18m^3/sec$ and the temperature and pH were 11° and 4.5 respectively. Only patches of ASA were present. The stream was 2 m. in width and 15 cm. deep. A moderate to dense moss growth was present on the substrate. There were stretches of beaver dam areas

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 52 continued: alternating with stretches of swift shallow water that contained patches of ASA and rearing area. No rearing fish were observed but rearing coho were captured in minnow traps indicating that Silver salmon utilize the area. No spawning Pink salmon were observed in this area although they were present throughout most of the Wasta Creek system in good numbers at the time of the helicopter survey.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area E - Wasta Creek ADF&G NO. 101-80-40 Date 6/20/84

1. Reach	1	1	1	1	1	1	1	1	1
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2.5	2.5	2.5	2.5	2	2	2	2	2
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width	a. Channel	3.4	4.3	5.6	5.5	4.1	3.9	7	8
	b. water	3.4	4.3	3.3	5.5	4.1	3.9	7	4.6
	c. special character	-	1	1	-	-	-	-	-
7. Water Type %	SS	25	30	40	35	40	40	40	35
	SF	65	20	30	30	20	25	30	35
	DS	10	50	50	70	70	60	60	70
	DF								
8. Undercut Banks (m)	left	50	50	70	70	70	70	60	60
	right	10	50	50	70	70	60	60	60
9. Debris Cover %	small	20	20	30	20	5	10	10	5
	large	50	30	30	30	10	15	15	15
10. Riparian Vegetation %		50	70	70	70	50	50	50	40
11. Substrate %:	a. boulders								
	b. cobble					1	10	15	30
	c. gravel	30	40	50	50	60	69	60	60
	d. sand	70	60	50	50	40	30	30	25
	e. organic muck								
	f. bedrock								
	g. other								
12. ASA		5	1	10	10	10	30	15	15
13. Gravel Shape		2	2	2	2	2	2	2	2
14. Streambank Vegetation									
	a. percentage	100	100	100	100	100	100	100	100
	b. type	B	B	B	B	B/C	B/C	C	B/C
15. Average Depth (cm)		8	30	30	20	30	20	60	25
16. Beaver activity		7	7	7	7	7	7	7	7
17. Potential Barrier		-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
	a. type	1,2/3	1,2/3	1,2/3	1,2/3	1,2/3	1,2/3	1,2/3	1,2/3
	b. density	3/1	3/1	3/1	3/1	3/1	3/1	3/1	3/1
19. Sampling		-	-	-	-	-	-	-	-
20. Rearing Area		70	90	90	80	80	60	50	50
21. Comments									

Section 1: Area E had a flow of .1 to .15 m³/sec. The pH and water temperature were 6.5 and 9.5°C respectively. Excellent rearing habitat is available with many rearing coho observed. Evidence of handlogging is present on both banks.

Section 2: Fontinalis moss present. Braiding is present through the old logging area.

Section 3: More braiding is present.

Section 4: A patch of blue clay was observed in the stream bottom. The ASA is not good quality due to an exceptionally high sand content.

Section 5: Muskeg is visible on the right bank. Muskeg appears to border the riparian zone up to about Section 15.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 6: Large patches of blue clay are visible the next two sections in several cut bank sites.

Section 7: Pink salmon bones found on bank. Good numbers of rearing coho are observed. The rearing area is still very good quality due to the presence of large debris, undercut banks and overhanging riparian vegetation.

Section 9: Stream goes completely under bank at present flow but does not appear to be a barrier.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area E - Wasta Ck ADF&G No. 101-80-40

Date 6/20/84

1. Reach	1	1	2	2	2	3	3	3	3
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	2.5	2.5	3	3	3	6	6	6	6
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. channel	5	7.2	4	5.8	4.3	3.6	4	5.9	3.5
b. water	3.4	2.8	3.8	5.2	3.3	3.5	2.8	2.2	3.2
c. special character	-	-	-	-	1	-	-	1	1
7. Water Type % SS	25	35	25	30	40	40	30	15	15
SF	60	40	50	40	30	50	60	80	75
DS	15	25	25	30	30	10	10	5	10
DF									
8. Undercut Banks (m) left	30	30	40	60	30	30	30	10	20
right	40	60	60	60	30	15	30	20	20
9. Debris Cover % small	2	1	1	5	1	10	10	10	10
large	6	3	5	15	7	30	20	15	15
10. Riparian Vegetation %	40	35	40	40	40	60	60	60	50
11. Substrate %:									
a. boulders	1	1	10		20	30	30	40	50
b. cobble	59	59	60	60	60	50	50	50	40
c. gravel	20	20	10	20	15	15	15	5	5
d. sand	20	20	20	20	5	5	5	5	5
e. organic muck									
f. bedrock									
g. other									
12. ASA	10	10	10	5	1	1	1	1	1
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	50/50	100	100	100	100	100	100
b. type	B	B	B/C	B	B	B	B	B	B
15. Average Depth (cm)	10	8	22	30	7	15	8	5	5
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1,2/3	1,2/3	1,2/3	1,2/3	1,2/3	1,2/3	3	3	3
b. density	3/2	3/2	3/2	3/2	3/2	3/2	2	2	1
19. Sampling	Y	-	-	-	-	-	-	-	-
20. Rearing Area	25	25	25	25	25	15	15	10	15
21. Comments									

Section 10: Left upper bank steep in this Section, but topography flattens out in Section 11.

Section 11: ASA quality is decreasing as the substrate becomes more compact. There is also a decline in rearing habitat quality with less large debris present.

Section 12: Muskeg is evident on right upper bank. The gradient increases slightly.

Section 13: A small tributary enters from the right bank 60 m. into the Section. The temperature is 10°C and the pH is 6. The tributary empties from old beaver dam area.

No ASA is available, but rearing habitat is present. A few rearing coho are observed.

Section 14: Some braiding is present at the start of the Section. A 1 m. debris

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 14 continued: falls is present which may be a barrier at normal to low water discharges. The bank is badly undercut in places and the channel and banks show signs of high intermittent flows.

Section 15: A small feeder tributary enters from the left bank. There is a noticeable decrease in the number of rearing fish observed as the gradient increases. Section 17 - 18: Braiding is present in Sections 17 and the start of Section 18. The stream enters a V-notch in Section 18.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area E - Wasta Creek ADF&G NO. 101-80-40 Date 6/20/84

1. Reach	3								
2. Section	19								
3. Section Length (m)	100								
4. Gradient	10								
5. Water Quality	3								
6. Water Width a. Channel	4.7								
b. water	2.3								
c. special character	-								
7. Water Type % SS	15								
SF	70								
DS	15								
DF									
8. Undercut Banks (m) left	15								
right	15								
9. Debris Cover % small	10								
large	15								
10. Riparian Vegetation %	30								
11. Substrate %: a. boulders	60								
b. cobble	30								
c. gravel	3								
d. sand	2								
e. organic muck									
f. bedrock	5								
g. other									
12. ASA	1								
13. Gravel Shape	2								
14. Streambank Vegetation									
a. percentage	100								
b. type	B								
15. Average Depth (cm)	7								
16. Beaver activity	5								
17. Potential Barrier	-								
18. Aquatic Vegetation									
a. type	3								
b. density	1								
19. Sampling	-								
20. Rearing Area	15								
21. Comments									

Section 19: Survey discontinued. Gradient and substrate size are increasing. Rearing habitat is decreasing in quality and the ASA is present only in minute amounts.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area F - Wasta Creek ADF&G NO. 101-80-40 Date 6/21/84

1. Reach	1	1	1	1	2	2	2	3	3
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	.75	.5	.75	.75	4	4	2	2	2
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. Channel	5.7	12.2	8.5	7.8	10	5.5	7	6.5	6.8
b. water	5.7	5	6.5	3.8	1.5	3.5	3	6	3.4
c. special character	1	1	1	1	2	2	1	1	1
7. Water Type % SS	20	50	55	55	80	75	60	40	45
SF	80	20	15	20	20	25	20	40	40
DS		30	30	25			20	20	15
DF									
8. Undercut Banks (m) left	5	30	10	15	10	10	5	25	15
right	20	30	30	15	20	10	20	25	10
9. Debris Cover % small	1	10	10	10	5	10	5	5	5
large	8	35	30	30	15	30	25	25	15
10. Riparian Vegetation %	5	20	5	5	65	60	25	20	10
11. Substrate %: a. boulders	5							5	5
b. cobble	15	20	20	40	40	40	50	50	45
c. gravel	70	65	65	45	45	40	35	30	35
d. sand	10	15	15	15	15	20	15	15	15
e. organic muck									
f. bedrock									
g. other									
12. ASA	60	20	10	15	5	5	15	10	15
13. Gravel Shape	3	3	3	3	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	3	5	25	13	8	6	5	10	8
16. Beaver activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1	-	1	1	1	-	-	-	1,3
b. density	3	-	.3	2	3	-	-	-	2
19. Sampling	-	-	Y	-	-	-	-	-	-
20. Rearing Area	40	70	75	70	85	85	80	75	75
21. Comments									

Area F has an estimated flow of .15m³/sec. The pH and water temperature are 6 and 9.75°C respectively. Braiding is present in places up to Section 14. Fontinalis moss is present.

Section 2: Excellent rearing area with many rearing coho observed up to Section 11. Good mix of large debris, undercut banks and overhanging riparian vegetation present. Section 5: Little riffle area available but excellent cover provides plenty of rearing area. A small tributary enters from the right bank at the start of the section. The substrate is primarily moss covered, flat boulders and large cobble. No ASA is present although rearing coho are observed. Gradient is 6%. Channel to right near tributary entrance. 200 meters long 3 meters wide with 10% ASA and good rearing habitat available.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM continued

Section 6: Good rearing habitat continues.

Section 7: Larger rearing coho observed.

Section 8: The substrate size increases in this stretch. The right upper bank gets steep.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area F-Wasta Creek ADF&G NO. 101-80-40 Date 6/21/84

1. Reach	3	4	4	4	4	4	4	4	5
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	5	3	5	5	3.5	5	3	3
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. Channel	6.8	7	13	4.3	8.2	12.6	9.2	7	7
b. water	2.5	5	5.2	1.8	6.2	3.1	3.2	4.2	3.5
c. special character	1	1	1	1	-	-	-	-	-
7. Water Type % SS	20	50	50	20	20	20	20	20	40
SF	75	50	50	75	75	65	75	80	60
DS	5			5	5	15	5		
DF									
8. Undercut Banks (m) left	5	1	1	5	1	0	10	10	10
right	5	30	10	5	1	5	1	1	10
9. Debris Cover % small	10	1	1	1	5	5	1	1	1
large	30	5	5	5	25	30	10	10	5
10. Riparian Vegetation %	30	15	10	10	10	0	5	5	10
11. Substrate %: a. boulders	5	5	35	40	35	25	40	10	15
b. cobble	40	40	45	40	30	40	25	10	40
c. gravel	40	40	15	10	25	25	10	5	25
d. sand	15	15	5	5	5	10	5	5	10
e. organic muck									
f. bedrock				5	5		20	70	10
g. other									
12. ASA	10	30	10	5	10	25	0	0	30
13. Gravel Shape									
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	8	5	8	10	20	13	13	10	13
16. Beaver activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1,2,3	1,2,3	1,2,3	1,2,3	1	1,2,3	1	1	1
b. density	3	3	3	3	3	3	2	2	2
19. Sampling	Y	-	-	-	-	-	-	-	-
20. Rearing Area	80	60	40	40	40	50	35	35	40
21. Comments									

Section 10: Many rearing Dolly Varden, Cutthroat, and Silver Salmon observed although none could be induced to enter our minnow trap.

Section 11: Gradient and substrate size increase in this reach. The amount of ASA and its quality correspondingly decrease.

Section 13: Several small debris falls that are not barriers are present. Rearing coho still observed although the amount of rearing habitat has decreased.

Section 14: Enter a steep V-notch in this section.

Section 15: Excellent rearing habitat with large debris and pools present. Good number of rearing fish are observed.

Section 16: A small trickle tributary enters from the left bank. No ASA is present but rearing coho are observed in the tributary

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 18: The gradient decreases in this reach and the amount of large debris and slow velocity water increases. ASA is also found in good quantity during this reach, even though there are stretches of bedrock present.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area F- Wasta Creek ADF&G NO. 101-80-40 Date 6/21/84

1. Reach	5	5	5	5	5	5	5	6	6
2. Section	19	20	21	22	23	24	25	26	27
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	1	1.5	1.5	.75	2	2	2	3
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. Channel	6.2	7	14	5.3	6	5.8	5.8	4	6
b. water	2	2	13	2.5	3	3.8	4.3	2	2
c. special character	-	-	1	-	-	-	-	-	-
7. Water Type % SS	40	65	50	50	60	50	50	25	25
SF	60	30	45	49	35	49	50	75	75
DS		5	5	1	5	1			
DF									
8. Undercut Banks (m) left	5	10	50	20	15	15	15	1	5
right	5	10	25	25	10	15	5	1	5
9. Debris Cover % small	5	1	5	1	1	5	1	1	1
large	5	15	40	20	5	30	15	5	1
10. Riparian Vegetation %	5	10	15	5	15	10	5	10	15
11. Substrate %: a. boulders	10	10	10	5	5	5			15
b. cobble	15	40	40	40	40	50	60	60	70
c. gravel	15	25	40	45	40	35	30	25	10
d. sand	10	10	10	10	10	10	10	10	5
e. organic muck									
f. bedrock	50	15			5			5	
g. other									
12. ASA	10	35	30	25	25	20	15	10	5
13. Gravel Shape	2	2	1	1	1	1	1	1	1
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	10	10	30	8	20	15	13	13	8
16. Beaver activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1	1	1	1,2	-	-	1	-	1
b. density	3	3	3	3	-	-	3	-	3
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	40	40	30	40	50	50	50	30	25
21. Comments									

Section 24: The stream channel shows evidence of high water discharges. Rearing SS, DV, and CT, have been observed with great regularity up to this Section.

Section 25: There is a marked decrease in the number of rearing fish observed above here. The stream forks 80 meters into the Section and the right fork is surveyed.

Section 26: The substrate is mainly flat cobble and the ASA is decreasing in quantity and quality.

Section 27: A small feeder tributary from left bank at end of Section enters from muskeg.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area F-Wasta ADF&G NO. 101-80-40 Date 6-21-84

1. Reach	6	6	6						
2. Section	28	29	30						
3. Section Length (m)	100	100	100						
4. Gradient	3	5	6						
5. Water Quality	3	3	3						
6. Water Width a. Channel	4.4	2	3.5						
b. water	4.4	2	3.5						
c. special character	-	-	-						
7. Water Type % SS	25	20	25						
SF	75	80	75						
DS									
DF									
8. Undercut Banks (m) left	5	15	15						
right	5	15	15						
9. Debris Cover % small	1	1	1						
large	8	1	5						
10. Riparian Vegetation %	15	15	20						
11. Substrate %: a. boulders	25	30	35						
b. cobble	65	55	55						
c. gravel	10	15	15						
d. sand	5	5	5						
e. organic muck									
f. bedrock		5							
g. other									
12. ASA	1	1	1						
13. Gravel Shape	1	1	1						
14. Streambank Vegetation									
a. percentage	100	100	100						
b. type	B	B	B						
15. Average Depth (cm)	13	25	8						
16. Beaver activity	5	5	5						
17. Potential Barrier	-	-	-						
18. Aquatic Vegetation									
a. type	1	1	1						
b. density	3	3	3						
19. Sampling	-	-	-						
20. Rearing Area	25	20	20						
21. Comments									

Section 28: The substrate is predominately large flat cobble and the amount of boulders is increasing. Rearing SS are still observed infrequently.

Section 29: The stream enters a V-notch with steep upper banks that are unstable in places.

Section 30: A small tributary enters from the right bank at the start of the Section. No ASA and very little rearing area is available as the gradient goes to 20% quickly. Survey discontinued. Both ASA and rearing habitat are decreasing as the gradient increases. Rearing fish are still infrequently observed. The fork to the left that occurred in Section 25 is paralleling the right fork on the far side of a muskeg at a distance of 300 to 400 meters. The left fork is very much similar to the right fork which was surveyed. The left fork did appear to have better quality rearing habitat.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area G - Wasta Creek ADF&G NO. 101-80-40 Date 7/8/84

1. Reach	1	1	1	1	1	1	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	1.5	1.5	2	2	2.5	2.5	3.5	4	4
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width									
a. Channel	9.9	6.8	7	4.3	4.5	6.4	5.8	3.9	4
b. water	6.5	5.9	4.5	4.3	3.4	6.4	3.6	3.9	4
c. special character	1	-	-	-	-	-	-	-	-
7. Water Type %									
SS	80	60	70	65	60	65	50	40	40
SF	15	25	20	25	35	30	40	50	55
DS	5	15	10	10	5	5	10	10	5
DF									
8. Undercut Banks (m)									
left	30	70	30	40	50	60	20	20	20
right	30	90	30	40	60	40	20	40	5
9. Debris Cover %									
small	10	5	1	1	1	2	1	1	1
large	10	5	1	5	7	5	5	2	5
10. Riparian Vegetation %	25	25	25	15	15	15	20	20	25
11. Substrate %:									
a. boulders			5	1	10		5	20	30
b. cobble	35	40	50	59	45	45	65	55	60
c. gravel	30	30	15	15	15	25	20	15	5
d. sand	35	30	30	25	30	30	10	10	5
e. organic muck									
f. bedrock									
g. other									
12. ASA	10	15	10	10	5	10	1	1	0
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	30	8	10	12	25	30	30	10	15
16. Beaver activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
b. density	3/3	2/3	2/3	2/2	2/2	2/2	2/2	2/2	2/2
19. Sampling	Y	-	-	-	-	-	Y	-	-
20. Rearing Area	80	75	75	75	75	75	40	40	40
21. Comments									

Section 1: Stream braided for 10 meters at start of Section. Many coho fry were observed at the mouth of the tributary. Flow was estimated at $.15m^3/sec$ and pH and temperature were 6 and $11^{\circ}C$ respectively.

Section 2: Fontinalis moss is present throughout this reach, heavy in places. While the ASA is not present in large amounts, the patches that are found are good.

Section 3: The ASA is becoming more compact and the substrate size is increasing.

Section 4: A decrease in the number of rearing SS is observed.

Section 6: Good quality ASA is found in this section although the amount of ASA decreases in the next reach, starting in Section 7.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM, continued

Section 7: The stream goes under the bank twice. The gradient and substrate size increase while the stream becomes more shallow and swifter.

Section 8: A small tributary enters from the right bank at the end of the Section. Flow is estimated at .04 m³/sec. PH-6 temperature - 10.5°C. The tributary has no ASA beyond 100 meters. The gradient is 6-10% and the substrate is predominately boulders and large cobble beyond 100 m.

Section 9: A .03 m³/sec. tributary enters from the right bank at the end of the Section. No ASA is available. The substrate is boulder and large cobble and the gradient starts increasing after 50 meters. The gradient in the mainstem increases towards the end of the Section to 5%.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area G - Wasta Creek ADF&G NO. 101-80-40 Date 7/8/84

1. Reach	3	3	3	3	3	3	3	4	4
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	5	6	6	6	4.5	5	5	2.5	2.5
5. Water Quality	3	3	3	3	3	3	3	3	3
6. Water Width a. Channel	4	2.5	1.5	2.7	2.6	3	2	2.3	4.9
b. water	3	2.5	1.5	2.7	2.6	3	2	2.3	3.9
c. special character	-	-	-	-	-	-	-	-	-
7. Water Type % SS	35	35	25	15	20	30	40	55	65
SF	60	65	75	85	75	60	55	40	30
DS	5				5	10	5	5	5
DF									
8. Undercut Banks (m) left	20	50	30	35	40	25	30	50	50
right	20	35	30	25	40	25	30	60	50
9. Debris Cover % small	1	3	1	1	3	2	2	2	3
large	10	6	3	2	5	4	2	2	5
10. Riparian Vegetation %	35	45	40	50	70	70	70	80	70
11. Substrate %: a. boulders	69	69	69	70	65	69	55	1	1
b. cobble	15	20	25	20	20	20	20	5	10
c. gravel	1	1	1	5	5	1	10	69	69
d. sand	15	10	5	5	10	10	15	25	20
e. organic muck									
f. bedrock									
g. other									
12. ASA	0	0	0	1	1	0	1	20	5
13. Gravel Shape	2	2	2	2	2	2	2	2	2
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B	B
15. Average Depth (cm)	18	13	10	8	15	8	15	15	15
16. Beaver activity	5	5	5	5	5	5	5	5	6
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
b. density	1/2	1/2	1/2	1/2	1/2	1/2	1/2	2/2	2/2
19. Sampling	-	-	-	-	-	-	-	-	-
20. Rearing Area	40	35	25	16	40	45	60	70	60
21. Comments									

Section 10: Boulders become the dominant substrate and no ASA is available Trout fry are observed. Broken shale present on the steep left bank. Fontinalis growth is heavy and a patch of vascular plants are growing midstream.

Section 11: Fontinalis growth is heavy. Moss covers just about the entire stream bottom in this section and is heavy throughout the reach. Cut banks provide good rearing habitat in this reach and a few rearing coho are observed.

Section 13: The upper left bank steepens in this Section although the upper banks flatten out again in Section 14.

Section 15: Fair numbers of rearing coho are observed.

Section 17: The gradient decreases and a good stretch of ASA is present. The density of moss on the substrate decreases.

Section 18: Some fresh beaver cuttings that appear to have washed downstream are found

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area G - Wasta Creek ADF&G NO. 101-80-40 Date 7/8/84

1. Reach	4	4	5						
2. Section	19	20	21						
3. Section Length (m)	100	100	100						
4. Gradient	2.5	3	5						
5. Water Quality	3	3	3						
6. Water Width									
a. Channel	3.7	3.3	2.6						
b. water	3.3	2.4	2.6						
c. special character	-	-	-						
7. Water Type %									
SS	65	50	35						
SP	35	45	55						
DS		5	5						
DF									
8. Undercut Banks (m)									
left	50	25	15						
right	50	25	15						
9. Debris Cover %									
small	4	5	5						
large	5	10	10						
10. Riparian Vegetation %	70	50	50						
11. Substrate %:									
a. boulders	25	25	35						
b. cobble	45	45	20						
c. gravel	20	20	5						
d. sand	10	10	1						
e. organic muck									
f. bedrock			39						
g. other									
12. ASA	1	0	0						
13. Gravel Shape	2	2	2						
14. Streambank Vegetation									
a. percentage	100	100	100						
b. type	B	B	B						
15. Average Depth (cm)	20	8	20						
16. Beaver activity	5	7	5						
17. Potential Barrier	-	-	-						
18. Aquatic Vegetation									
a. type	1/3	1/3	1/3						
b. density	2/2	2/2	1/2						
19. Sampling	-	-	-						
20. Rearing Area	65	50	35						
21. Comments									

Section 19: The substrate is dominated by large flat cobble and the ASA approaches 0%. Several seeps enter from the left bank where a large muskeg area exists beyond the riparian zone.

Section 20: Another small feeder enters from the muskeg on the left.

Section 21: Very few rearing fish have been observed since Section 19. Moss growth gets heavy again. Survey discontinued. The stream enters a large active beaver dam and pond area. Rearing trout only are observed above the dam. The gradient increases beyond the beaver dam and the channel shows signs of intermittent high flows. The beaver pond is overflowing into another muskeg area to the SW.

FISH SAMPLING FORM

ADF&G No. 101-80-40 Date 7/26/84 Stream Name Wasta Creek
Survey Area B H₂O Temp. 12.5°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1000	1020	SS-105 5 SB	Section 7
2	1125	1155	Ø	coho observed Section 13
3	1110	1140	Ø	Section 29 8/19/84
4	0830	0900	Ø	up tributary to left in Section 15 9/4/84

FISH SAMPLING FORM

ADF&G No. 101-80-40 Date 8/19/84 Stream Name Wasta Creek
 Survey Area Area C H₂O Temp. 12⁰ Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0900	0920	Ø	Section 6

FISH SAMPLING FORM

ADF&G No. 101-80-40 Date 6/20/84 Stream Name Wasta Creek
Survey Area Area D H₂O Temp. 12°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0910	0920	0	Section #9 coho fry were seen around trap
2	1415	1445	2 SB	Section #12
3	1000	1030	SS 48mm	Tributary to lake 9/4/84
4	1000	1030	SS 80mm	Tributary to lake 9/4/84

FISH SAMPLING FORM

ADF&G No. 101-80-40 Date 6/20/84 Stream Name Wasta Creek

Survey Area Area E H₂O Temp. 9.75° Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1110	1125	0	Section 10 SS fry were seen around trap.

FISH SAMPLING FORM

ADF&G No. 101-80-40 Date 6/21/84 Stream Name Wasta Creek
Survey Area Area F H₂O Temp. 9.75⁰ Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1015	1035	Ø	coho fry observed Section 3
2	1230	1300	Ø	coho and trout fry and rearing fish
3	1230	1300	Ø	observed Section 10

FISH SAMPLING FORM

ADF&G No. 101-80-40 Date 7/8/84 Stream Name Wasta Creek
 Survey Area Area G H₂O Temp. 11°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0910	1510	SB 1 SS 70 75 55 50 50 50mm	Section 1
2	1002	1022	Ø	Coho fry were observed Sect. 1
3	1145	1210	SS 1 50 mm	Section 14

PEAK ESCAPEMENT RECORD

101-80-40

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/2/61	20			at mouth
8/24/62	-			no fish observed
8/16/63	300			poor visibility
8/11/64	-			no fish observed
8/23/65	675			600 at mouth, poor visibility
8/10/66	-			no fish observed
8/25/70	200			at mouth
1972				two surveys - no fish observed
1973				poor visibility-no fish observed
8/11/75				no fish observed
9/7/76	4100		500 sockeye	poor visibility
8/19/77	32,600			26,000 at mouth
7/30/78	26,000			15,000 at mouth
8/10/80	4,003			at mouth, uncounted fish present
8/19/80	4,006			uncounted fish present
8/11/81	603			uncounted fish present
8/25/81			10 chum	
8/9/82	20,003			uncounted fish present
9/17/82			101 sockeye	

BASELINE AQUATIC SURVEY

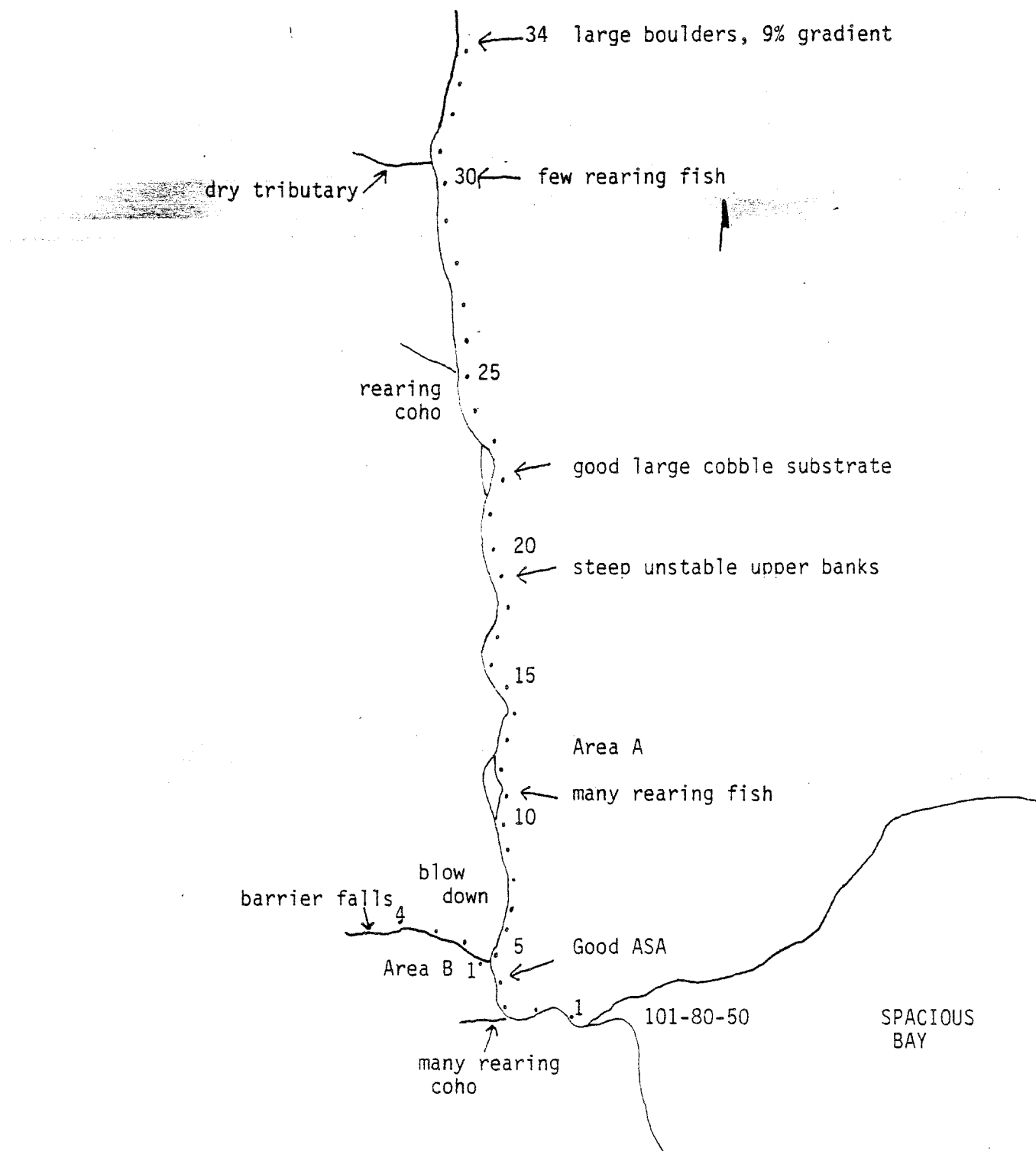
Part I.

1. Survey Areas A 1-34 B 1-4 2. Historical Fish PS, CS, SS, DV, CT, ST

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-50
 3. USGS Map No. Ketchikan D-6 4. Legal Location R88E, T69S, S-21
 5. Latitude and Longitude 55°51'55" 131°55'10" 6. Agency Unit 05
 7. Aerial Photo No. 0031, 1373, 140, 9-12-73 8. MGMT Area K29-722
 9. Estimated Flow .7 m³/sec 10. Flow Stage 2
 11. Land Use a. present none observed b. historical access none observed
 12. Temperature Sensitivity and/or origin 5.4
 13. Access 2 14. Stream Temperature 10.5°
 15. pH 6.5 16. Intertidal Zone a. Gradient 1
 b. Bottom type 1. fines 35 2. gravel/small cobble 35
 3. large cobble/boulders/bedrock 30
 c. ASA fair
 d. Schooling only in Spacious Bay
 e. Shellfish potential potential for clams and Dungeness crab
 f. Anchorage extensive tidal flats at mouth

17. Comments Good gravel is available in the middle ITZ. The upper ITZ substrate contains a lot of fines, except for the last 20 meters. About 200m² of ASA is present. The stream was in a high water stage and rising when the first 10 sections were surveyed.
 101-80-50 contains nearly two miles of fairly uniform, good quality ASA. The substrate is rather large but not very compact. The gradient increases in Section 33 and the substrate becomes predominately boulders. The best rearing habitat is located in Sections 4 through 18 and rearing coho and trout were abundant. Large debris provided cover and pool area in this stretch, rearing coho were observed in good numbers up to Section 25. A large amount of blowdown was observed during the survey. The stream is fairly swift and capable of high volume discharges. The survey on 7/13/84 was discontinued when the stream began rising quite swiftly. The only way to cross the stream in the lower reaches was on logs across the stream.
18. Investigators Burns/Carriello 19. Weather 1,6
 20. Date 7/13/84 7/25/84 -859- 20. Time 0830-1400, 0630-1530



101-80-50



1. Upper ITZ



2. Typical habitat in Sections 1 through 3



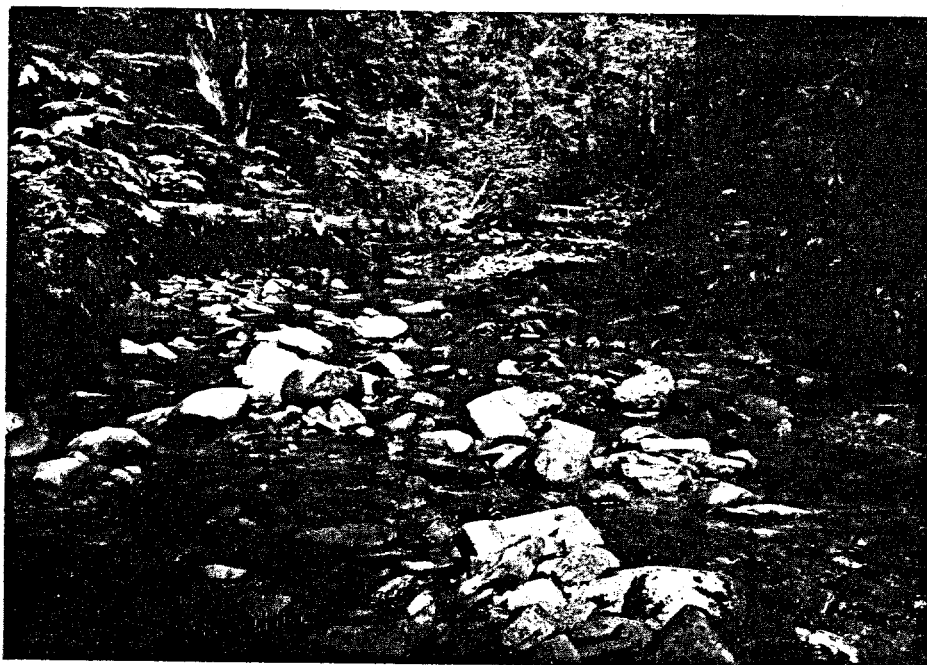
3. Section #13



4. Section #15 - Good riffle area



5. Section #29



6. End of Section #34

101-80-50
Area B



1. 50 m. up the left tributary



2. 300 m. up the left tributary

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
Area A					Area B				
1	100	11.5	20	230	1	100	1	30	30
2	100	9.5	15	142.5	2	100	1.5	15	22.5
3	100	8.5	65	552.5	3	100	2.0	10	20
4	100	10.0	40	400	4	100	2.0	1	2
5	100	4.3	30	129	Total ASA Area "B"				
6	100	8.0	60	480					75.5m ²
7	100	5.8	30	174					
8	100	8.0	40	320					
9	100	12.0	40	480					
10	100	7.0	50	350					
11	100	8.0	30	240					
12	100	7.5	20	150					
13	100	9.5	15	142.5					
14	100	5.5	20	110					
15	100	3.0	30	90					
16	100	7.6	40	304					
17	100	3.5	15	52.5					
18	100	6.0	15	90					
19	100	3.5	15	52.5					
20	100	5.8	15	87					
21	100	7.0	20	140					
22	100	3.0	20	60					
23	100	5.5	15	82.5					
24	100	6.0	10	60					
25	100	4.0	15	60					
26	100	6.0	10	60					
27	100	6.0	5	30					
28	100	5.0	5	25					
29	100	6.0	5	30					
30	100	4.0	5	20					
31	100	3.0	1	3					
32	100	3.0	10	30					
33	100	3.0	0	0					
34	100	4.5	0	0					
Total ASA - Area "A"				5,177m ²					

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area A ADF&G No. 101-80-50

1. Section Number	11	12	13	14	15	16	17	18	19	20
2. Channel Type										
3. Riparian Vegetation Class	C-3	C-3	C-31	C-6	C-6	C-1	C-1	C-1	C-1	C-1
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
5. Lower Bank Composition										
a. bedrock or boulder	20	25	10	10		30	25	40	30	30
b. rubble	40	35	30	35		30	35	40	50	40
c. cobble	20	20	30	30	5	20	35	20	20	20
d. decomposed organic mat.										
e. gravel	10	10	20	20	10	10	5			5
f. sand & silt	10	10	10	5	75	10	0			5
6. Bed substrate composition										
a. bedrock or boulder	40	35	45	35	30	20	40	45	40	35
b. rubble & cobble	40	30	25	30	35	35	25	30	35	35
c. coarse gravel	25	20	15	20	20	30	20	15	15	20
d. fine gravel & sand	15	10	10	10	10	15	15	10	10	15
e. silt-clay deposits										

7. Comments Section 13: C-1 left bank
 Section 14: Alder, devil's club on right upper bank. Open brushy spots between large spruce.
 Section 17: Upper banks get steep
 Section 19: Lots of devil's club and stink currant next to stream
 Section 20: C-1 left bank, C-6 right

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area A ADF&G No. 101-80-50

1. Section Number	21	22	23	24	25	26	27	28	29	30
2. Channel Type										
3. Riparian Vegetation Class	C-6	C-6	C-6	C-6	C-6,1	C-6,1	C-6,1	C-6	C-6,1	C-1,3
4. Incision Depth (m)	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
5. Lower Bank Composition										
a. bedrock or boulder	30	30	30	20	20	30	30	30	30	50
b. rubble	30	30	30	40	40	30	30	30	30	30
c. cobble	30	30	30	30	30	30	30	30	30	30
d. decomposed organic mat.										
e. gravel	5	5	5	5	5	5	5	5	5	5
f. sand & silt	5	5	5	5	5	5	5	5	5	5
6. Bed substrate composition										
a. bedrock or boulder	30	30	35	45	35	40	55	55	55	40
b. rubble & cobble	35	35	30	30	30	35	25	25	25	25
c. coarse gravel	20	20	20	15	25	15	15	15	15	10
d. fine gravel & sand	15	15	15	10	10	10	10	5	5	5
e. silt-clay deposits										

7. Comments Section 21: floodplain, alder and devil's club and big spruce on right bank
 Section 26: C-6 left bank, C-1 right
 Section 27: C-6 right bank, C-1 left
 Section 28: Tall alder, big spruce, small hemlock, devil's club, and small spruce
 Section 29: Instable steep upper right bank

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area A ADF&G No. 101-80-50

1. Section Number	31	32	33	34						
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-1	C-1	C-1						
4. Incision Depth (m)	.5	.5	.5	.5						
5. Lower Bank Composition										
a. bedrock or boulder	68	30	48	100						
b. rubble	20	40	40							
c. cobble	10	20	10							
d. decomposed organic mat.										
e. gravel	1	5	1							
f. sand & silt	1	5	1							
6. Bed substrate composition										
a. bedrock or boulder	65	55	65	75						
b. rubble & cobble	20	25	20	15						
c. coarse gravel	10	15	10	10						
d. fine gravel & sand	5	5	5	5						
e. silt-clay deposits										

7. Comments Section 34: V-notch - bedrock along most of exposed lower bank

CLEVELAND PENINSULA BASELINE (LEVEL TWO) AQUATIC SURVEY
HYDROLOGIC MEASUREMENTS

Stream Name Area B

ADF&G No. 101-80-50

1. Section Number	1	2	3	4						
2. Channel Type										
3. Riparian Vegetation Class	C-1	C-1	C-1	C-1,5						
4. Incision Depth (m)	.5	.5	.5	.5						
5. Lower Bank Composition										
a. bedrock or boulder			20	30						
b. rubble		20	20	30						
c. cobble	10	20	20	30						
d. decomposed organic mat.										
e. gravel	40	30	20	5						
f. sand & silt	50	30	20	5						
6. Bed substrate composition										
a. bedrock or boulder	-	20	30	50						
b. rubble & cobble	25	40	40	30						
c. coarse gravel	40	30	25	15						
d. fine gravel & sand	35	10	5	5						
e. silt-clay deposits										

7. Comments

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 108-50-50 Date 7/13/84

1. Reach	1	1	1	2	2	2	2	2	2
2. Section	1	2	3	4	5	6	7	8	9
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	1.5	2	1	2	1.5	3	1.5	2	3
5. Water Quality	4	4	4	4	4	4	4	4	4
6. Water Width a. channel	24.5	9.5	19.5	21	12	13	7.8	9	12
b. water	11.5	9.5	8.5	10	4.3	8	5.8	8	12
c. special character	-	-	-	-	1	1	1	1	1
7. Water Type % SS	15	10	10	15	20	15	20	15	15
SF	60	70	90	85	78	80	70	85	85
DS		20			1	5	5		
DF	25				1		5		
8. Undercut Banks (m) left	0	5	10	10	30	20	15	15	20
right	0	15	10	10	25	25	15	15	20
9. Debris Cover % small	0	1	1	1	1	5	2	1	1
large	1	1	3	10	10	20	20	2	2
10. Riparian Vegetation %	1	5	10	10	10	15	15	10	10
11. Substrate %:									
a. boulders	10	15	10	15	15	10	20	20	20
b. cobble	50	30	60	70	65	60	60	60	55
c. gravel	25	10	20	10	10	20	10	10	10
d. sand	10	15	5	5	10	10	10	10	10
e. organic muck									
f. bedrock	5	30	5						
g. other									
12. ASA	20	15	65	40	30	60	30	40	40
13. Gravel Shape	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100	100	100
b. type	A	A	A	B	B	B	B	B	B
15. Average Depth (cm)	23	40	20	25	35	40	15	20	13
16. Beaver Activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	2/3	3	4/3	3	3	3	3	3/1	3/1
b. density	3/1	1	3/1	1	1	1	1	1/3	1/3
19. Sampling	-	-	-	Y	-	-	-	-	-
20. Rearing Area	10	30	15	15	15	20	25	10	15

21. Comments Section 1: The stream is at high water stage and very difficult to survey.
 Section 2: A small tributary enters from the left bank at end of Section in with a pH of 4 and a temp of 11°C. Good quality cobble ASA was found near the end of the section.
 Section 3: Good ASA suitable for PS and CS is provided.

Section 3: continued. The rearing habitat in Sections 1-3 is poor quality due to the lack of debris and riparian vegetation.

Section 4: Alder is present in the stream channel in Sections 4-6. A .09 m³/sec tributary, surveyed as Area B, enters from the left bank at the end of the section. The mainstem channel narrows and large debris is present to provide better rearing habitat.

Section 5: The substrate is predominately large cobble. An active channel enters from the left bank. The left channel is about 200 m. long and averages 2 m. wide, with 50% ASA. The substrate is cobble with 20% sand. The channel rejoins the mainstem in Section 7.

Section 6: An old slide with exposed soil is present on the right upper bank. The substrate is cobble and provides good quality ASA. Rearing coho are abundant in the many pools and cover provided by large debris.

Section 7: Heavy blowdown from NE winds is present on the left upper bank. The right upper bank gets steep.

Section 8: The blow down on the upper left bank appears to be from SE winds in this section.

Section 9: An adult CS is observed in a riffle below a debris pool. A small tributary enters from the left bank with a pH of 5 and a temp. of 11°C. No ASA is present as the substrate is organic muck. A heavy growth of vascular plants is present in the tributary as it enters a swampy area.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G No. 101-80-50 Date 7/13 + 7/25/84

1. Reach	2	2	2	2	2	2	2	2	3
2. Section	10	11	12	13	14	15	16	17	18
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	3	2.5	3	2.5	2.5	2.5	3.5	3
5. Water Quality	3	1	1	1	1	1	1	1	1
6. Water Width	a. channel	19	18	13	20	6	13.5	12.6	12
	b. water	7	8	7.5	9.5	5.5	3	7.6	3.5
	c. special character	1	1	1	1	1	-	-	-
7. Water Type %	SS	20	20	20	25	25	30	30	15
	SF	78	65	80	75	70	65	70	85
	US	1	10			5	5		
	UF	1	5						
8. Undercut Banks (m)	left	10	5	1	5	1	5	15	10
	right	20	10	10	5	1	5	0	0
9. Debris Cover %	small	1	1	1	1	1	1	1	1
	large	5	1	1	2	11	5	3	5
10. Riparian Vegetation %		15	10	5	5	5	1	1	5
11. Substrate %:									
	a. boulders	15	20	35	45	35	28	20	40
	b. cobble	70	40	35	30	35	40	35	25
	c. gravel	10	35	25	20	25	25	40	30
	d. sand	5	5	5	5	5	5	5	5
	e. organic muck								
	f. bedrock						2		
	g. other								
12. ASA		50	30	20	15	20	30	40	15
13. Gravel Shape		2,3	1,2	1,2	1,2	1,2	1,2	1,2	1,2
14. Streambank Vegetation									
	a. percentage	100	100	100	100	100	100	50/50	50/50
	b. type	B	A	A	A	A	A/B	A/B	A/B
15. Average Depth (cm)		13	10	10	10	15	30	10	30
16. Beaver Activity		5	5	5	5	5	5	5	5
17. Potential Barrier		-	-	-	-	2	-	-	-
18. Aquatic Vegetation									
	a. type	3	3	3	3	3	3/1	3/1	3
	b. density	1	2	2	2	2	2/3	2/3	2
19. Sampling		-	-	-	-	-	Y	-	-
20. Rearing Area		15	30	20	30	30	40	30	30

21. Comments Section 10: The survey on 7/16 had to be discontinued because the water level began rising quite rapidly due to exceedingly heavy rains.
 Section 11: The survey was resumed 7/25 and the water level was at a normal stage. Many more rearing fish were observed at the lower water stage. A channel to the left leaves the stream and connects back to the mainstem in Section 13. The channel is about 150 m. long, 3 m. in width, and has an ASA

Section 11: continued. of 10%.

Section 14: A 1 m. debris dam which may be a barrier to PS is present. The ASA continues to be good quality with a loose gravel and cobble substrate.

Section 15: A good holding pool below a log jam is present. A stretch of the left lower bank is composed of bedrock.

Section 16: The stream channel begins to narrow down. The ASA is still adequate quality with the substrate being moderately loose.

Section 17: The upper banks get steep and blowdown from So. winds is present on the left bank. The substrate size increases. Fractured bedrock is present along the unstable right bank at the start of the section.

Section 18: There is a decrease in the overall habitat quality due to a decrease in the availability of pools and undercut banks. Good numbers of coho however are still observed in the few good patches of rearing area available.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area A ADF&G NO. 101-80-50 Date 7/25/84

1. Reach	3	3	4	4	4	4	4	4	5
2. Section	19	20	21	22	23	24	25	26	27
3. Section Length (m)	100	100	100	100	100	100	100	100	100
4. Gradient	3	2.5	2.5	3	3.5	3	4	3.5	4.5
5. Water Quality	1	1	1	1	1	1	1	1	1
6. Water Width a. Channel	8	7.8	12	8	15	12	13	11	17
b. water	3.5	5.8	7	3	5.5	6	4	6	6
c. special character	-	-	1	1	1	1	1	-	1
7. Water Type % SS	25	20	20	25	25	20	25	20	15
SF	75	80	80	75	75	80	75	80	85
DS									
DF									
8. Undercut Banks (m) left	1	0	1	0	1	0	5	1	0
right	0	0	1	1	1	0	5	10	0
9. Debris Cover % small	1	1	1	1	1	1	1	2	2
large	6	5	5	1	2	5	5	10	10
10. Riparian Vegetation %	5	1	5	10	5	5	10	10	10
11. Substrate %: a. boulders	40	35	30	30	35	45	35	40	55
b. cobble	35	35	35	35	30	30	30	35	25
c. gravel	22	25	30	28	28	20	30	20	20
d. sand	3	5	5	7	7	5	5	5	
e. organic muck									
f. bedrock									
g. other									
12. ASA	15	15	20	20	15	10	15	10	5
13. Gravel Shape	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
14. Streambank Vegetation									
a. percentage	100	50/50	100	100	100	50/50	100	100	100
b. type	B	A/B	A	A	A	A/B	B	B	B
15. Average Depth (cm)	15	25	10	10	10	10	10	10	15
16. Beaver activity	5	5	5	5	5	5	5	5	5
17. Potential Barrier	-	-	-	-	-	-	-	-	-
18. Aquatic Vegetation									
a. type	3/1.2	3/1.2	3/1.2	3/1.2	3/1.2	3/1.2	3/1.2	3/1.2	3/1.2
b. density	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3
19. Sampling	-	-	Y	-	-	-	Y	-	-
20. Rearing Area	25	20	20	30	25	20	25	25	15

21. Comments Section 19: The upper banks are steep with blowdown and old slides present on both sides.
 Section 20: Few rearing fish are observed in this section
 Section 21: The stream enters a flood plain with several flood channels present. More blowdown is observed on the upper left bank.
 Section 22: Good quality large cobble is present for ASA and many rearing coho are observed.
 Section 24: The braiding and flood channels end in this section
 Section 25: A small tributary enters from the left bank at the start of section. The tributary contains good ASA for 50 m. The gradient then increases to over 20% and the substrate turns to boulders. Rearing coho were also observed in the first 50 m. A trickle tributary enters from the right bank at the end

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM continued

Section 25: continued of the section. The right and left banks alternate between being steep and being floodplain for the next few sections. About 20 rearing coho were observed trapped in a side pool.

Section 27: The substrate is becoming larger and more compact in this reach and there is little usable ASA. Fractured bedrock is present along the left bank.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G NO. 101-80-50 Date 7/25/84

1. Reach	5	5	5	5	5	6	6		
2. Section	28	29	30	31	32	33	34		
3. Section Length (m)	100	100	100	100	100	100	100		
4. Gradient	4.5	4.5	4	6	5.5	7.5	9		
5. Water Quality	1	1	1	1	1	1	1		
6. Water Width a. Channel	16	12	15	10	14	12	12		
b. water	5	6	4	3	3	3	4.5		
c. special character	1	-	-	-	-	-	-		
7. Water Type % SS	22	20	15	10	10	10	10		
SF	70	80	85	90	85	89	85		
DS	8				5	1	5		
DF									
8. Undercut Banks (m) left	0	1	0	0	0	0	0		
right	0	0	0	0	1	1	0		
9. Debris Cover % small	1	1	1	1	1	1	1		
large	5	5	5	10	10	5	5		
10. Riparian Vegetation %	7	5	5	7	5	10	5		
11. Substrate %: a. boulders	55	55	60	65	55	65	75		
b. cobble	25	25	25	20	25	20	15		
c. gravel	19	19	14	15	19	14	14		
d. sand	1	1	1		1	1	1		
e. organic muck									
f. bedrock									
g. other									
12. ASA	5	5	5	1	10	0	0		
13. Gravel Shape	1.2	1.2	1.2	1.2	1.2	1.2	1.2		
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100	100		
b. type	B	B	B	B	B	B	B		
15. Average Depth (cm)	10	10	15	8	8	10	25		
16. Beaver activity	5	5	5	5	5	5	5		
17. Potential Barrier	-	-	-	2	-	-	2		
18. Aquatic Vegetation									
a. type	3/1,2	3/1,2	3/1,2	3/1,2	3/1,2	3/1,2	3/1,2		
b. density	2/3	2/3	2/3	2/3	2/3	2/3	2/3		
19. Sampling	-	-	-	-	-	-	-		
20. Rearing Area	30	20	15	15	15	15	15		

21. Comments Section 28: A small seep enters from the left bank. An overflow channel to the left is present providing rearing area but no ASA. Rearing coho were infrequently observed.
 Section 29: A trickle tributary with a gradient at 15% enters from the right bank. The steep upper right bank shows signs of instability.
 Section 30: A large, dry, flood tributary with a substrate of large boulders enters from the left bank. Rearing coho observed in the mainstem in frequently.
 Section 31: Several large blowdown spruce from NE winds are present. A 1 m. debris falls is observed.
 Section 32: There are patches of gravel found around plunge pools but the substrate changes to predominately boulders the last half of the section.

Section 33: The fisheries habitat becomes very poor quality in this reach. The gradient increases and the substrate is large and compact. Only a few rearing trout are observed.

Section 34: A 1 m. debris falls is present. Survey discontinued. The gradient is a steady 8 to 10% and there is no ASA and very little rearing habitat available. Patches of bedrock are now observed in the large boulder substrate. Much white water is present and the stream is entering a V-notch.

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name Area B ADF&G NO. 101-80-50 Date 7/25/84

1. Reach	1	1	2	2				
2. Section	1	2	3	4				
3. Section Length (m)	100	100	100	100				
4. Gradient	4	5	6.5	6				
5. Water Quality	3	3	3	3				
6. Water Width a. Channel	5	7	3.8	4.8				
b. water	1	1.5	2	2				
c. special character	-	-	-	-				
7. Water Type % SS	40	30	30	20				
SF	60	70	70	80				
DS								
DF								
8. Undercut Banks (m) left	80	40	30	10				
right	75	40	20	10				
9. Debris Cover % small	5	5	3	1				
large	25	25	10	10				
10. Riparian Vegetation %	60	60	20	20				
11. Substrate %: a. boulders		20	30	50				
b. cobble	25	40	40	30				
c. gravel	60	35	30	20				
d. sand	15	5						
e. organic muck								
f. bedrock								
g. other								
12. ASA	30	15	10	1				
13. Gravel Shape	1,2	1,2	1,2	1,2				
14. Streambank Vegetation								
a. percentage	100	100	100	100				
b. type	A	A	B	B				
15. Average Depth (cm)	3	5	5	5				
16. Beaver activity	5	5	5	5				
17. Potential Barrier	-	-	2	-				
18. Aquatic Vegetation								
a. type	3/1,2	3/1,2	3/1,2,4	3/1,2,4				
b. density	1/3	1/3	1/3	1/3				
19. Sampling	-	-	-	-				
20. Rearing Area	40	25	25	20				

21. Comments Section 1: Good rearing habitat with large debris, undercut banks and overhanging riparian vegetation is present. Rearing coho are observed in moderate numbers. The first 50 meters contains a nice stretch of gravel and good ASA. The flow is estimated at .09 m³/sec.
 Section 3: The substrate size increases and the amount and quality of rearing habitat decreases. The substrate becomes primarily boulders and angular cobble. A 1 m. debris falls is present.
 Section 4: Survey discontinued. Above here the stream enters a v-notch with a gradient of 12%. A barrier stairstep falls with a vertical rise of 6 m. is present 100 m. above end of survey.

FISH SAMPLING FORM

ADF&G No. 101-80-50 Date 7/16/84 Stream Name
 Survey Area A H₂O Temp. 10.5 Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1000	1230	Ø	Section 4
2	1130	1200	Ø	Section 11
3	1130	1200	ST	75 mm 75 mm Sec. 11

FISH SAMPLING FORM

ADF&G No. 101-80-50 Date 7/25/84 Stream Name _____
 Survey Area A H₂O Temp. _____ Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	0905	1430	ST - 125,110 110,115,80 SS - 80,45,90 80,45,40,45,80 45, 90	Section 15
2	1010	1030	DV - 110 mm SS - 78,72,75, 80,85,75,85,85mm ST - 110,72	Section 21
3	1130	1140	9 SS - all 40- 45 mm	Trap set in a pool where about 20 SS were trapped by low water Section 25

101-80-50
PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/6/78	1,000			
8/16/79	1,000			
8/28/80	5,000			
8/25/81	3,500			
8/18/82	12,205			
8/19/82		28		
9/18/82			24 coho	

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas 1-16 2. Historical Fish PS, SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-52

3. USGS Map No. Ketchikan 4. Legal Location R88E, T69S, S-22

5. Latitude and Longitude 55°52'10" 131°54' 6. Agency Unit 05

7. Aerial Photo No. 0031,1373,140,9-12-73,02190 8. MGMT Area K29-722

9. Estimated Flow .7 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical access none observed

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature 10°C

15. pH _____ 16. Intertidal Zone a. Gradient 3.5

b. Bottom type 1. fines 1 2. gravel/small cobble 5

3. large cobble/boulders/bedrock 94

c. ASA poor - substrate primarily boulders and is very compact

d. Schooling only in Spacious Bay

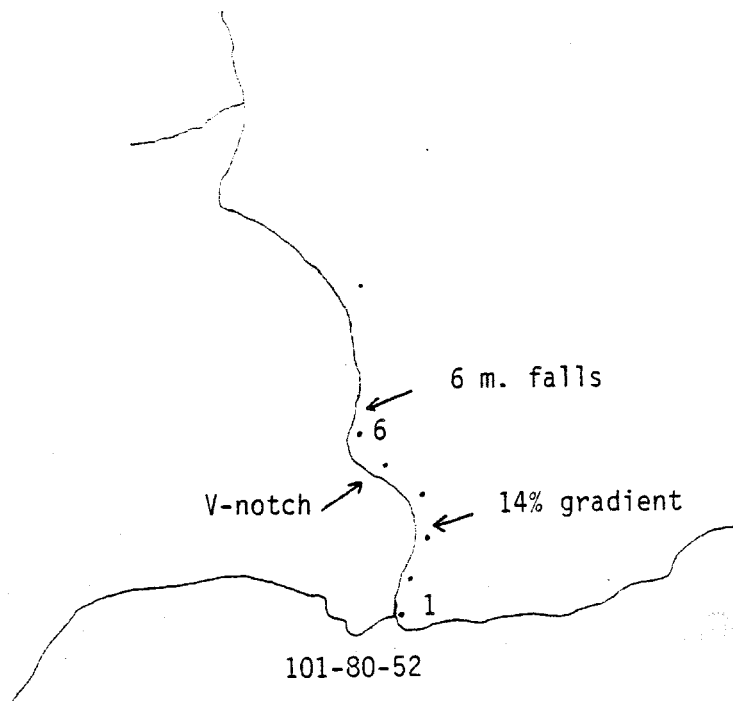
e. Shellfish potential Dungeness crab in bay

f. Anchorage good or small skiff 200 m. west of mouth

17. Comments 101-80-52 is a steep, swift stream with large substrate and limited fisheries habitat. A 6 m. barrier falls is present 550 m. above the ITZ. The only ASA, other than what is available in boulders, is found in patches at the edge of pools. Records credit the stream with an escapement figures for this stream may be higher than what actually takes place. Rearing coho were captured in Section 1.

18. Investigators Burns/Cariello 19. Weather 1

20. Date 7/11/84 -882- 20. Time 1000-1200



101-80-52



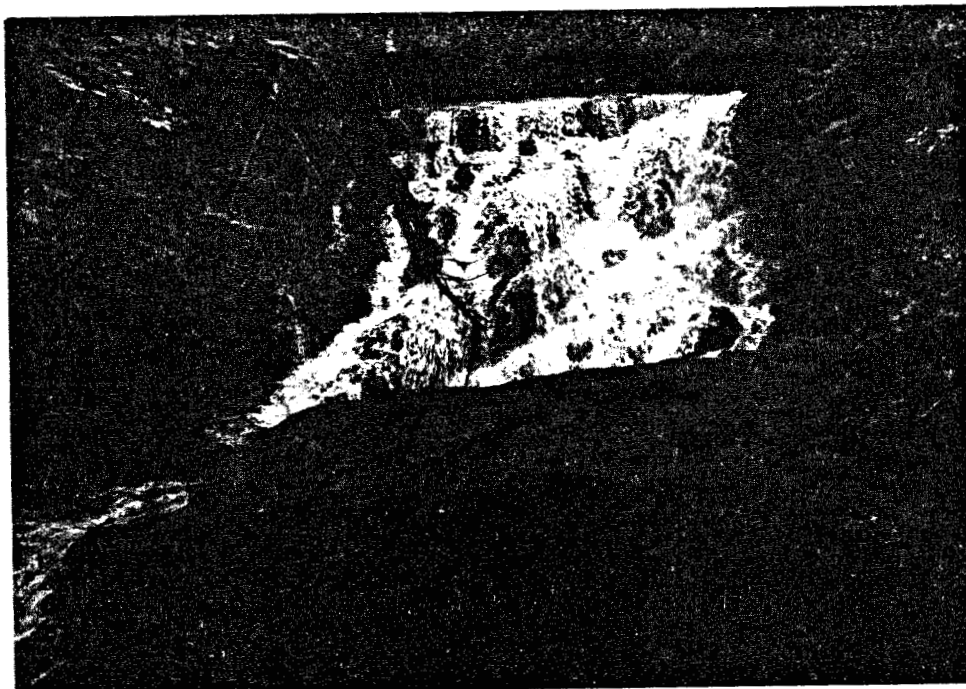
1. Compact boulders provide poor ASA in the ITZ



2. Section 2: The stream is characterized by large substrate and rather swift water



3. A possible PS barrier is present at the end of Section 3.



4. The survey areas was discontinued at a 6 m. barrier falls in Section 6.

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	15	1	15					
2	100	5.1	1	5.1					
3	100	10.1	1	10.1					
4	100	9	1	9					
5	100	6.2	0	0					
6	45	6.4	0	0					
		Total		39.2					

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-52 Date 7/11/84

1. Reach	1	1	2	2	2	2			
2. Section	1	2	3	4	5	6			
3. Section Length (m)	100	100	100	100	100	45			
4. Gradient	6.5	7	14	12	20	20			
5. Water Quality	3	3	3	3	3	3			
6. Water Width a. channel	15	5.1	12.1	11	11.2	6.4			
b. water	15	5.1	10.1	9	6.2	6.4			
c. special character	-	1	1	-	-	-			
7. Water Type % SS	10	5	10	5	5	5			
SF	75	90	80	70	65	70			
DS	5		5	10	5	5			
DF	10	5	5	15	25	20			
8. Undercut Banks (m) left	0	5	5	15	25	20			
right	0	5	0	0	0	0			
9. Debris Cover % small	2	1	2	1	0	0			
large	4	3	8	6	8	6			
10. Riparian Vegetation %	25	10	10	5	5	5			
11. Substrate %:									
a. boulders	69	79	74	70	40				
b. cobble	20	15	20	15	1				
c. gravel	10	5	5	5	1				
d. sand	1	1	1						
e. organic muck									
f. bedrock				10	58				
g. other									
12. ASA	1	1	1	1	0				
13. Gravel Shape	2	2	2	2	2				
14. Streambank Vegetation									
a. percentage	100	100	100	100	100	100			
b. type	B	B	B	B	B	B			
15. Average Depth (cm)	10	20	20	10	20	17			
16. Beaver Activity	5	5	5	5	5	5			
17. Potential Barrier	-	-	2	-	1	2			
18. Aquatic Vegetation									
a. type	1,2,3	1,3/2	1,3/2	1,3/2	1,3/2	1,3/2			
b. density	2	2/3	2/3	2/3	2/3	2/3			
19. Sampling	Y	Y	Y	Y	Y	Y			
20. Rearing Area	10	5	10	10	5	5			
21. Comments									

Section 1: The only rearing habitat available is in deep pools or shallow slow areas that lack good cover. The only good ASA is found in patches as gravel in the vicinity of pools.

Section 2: The water is too swift to provide much rearing habitat. Bedrock is present along the right bank for 30 m. There is some slight braiding of the stream present.

Section 2 cont. Rearing coho are observed but appear to be in low density.

Section 3: The riparian vegetation consists of devil's club, alder, and blueberry. A 1.5 m. falls over an old snag is present at the end of the section and may be a PS barrier. The gradient and substrate size are increasing.

Section 4: Several deep holding pools are available. Both upper banks get steep and there is a slump on the right upper bank at the end of the section. The stream gradient increases to 20% during the last 30 m. of the section. A small tributary enters from the right bank.

Section 5: The stream enters a V-notch with stable bedrock upper banks. A possible velocity barrier and many small falls with whitewater are present.

Section 6: The survey is discontinued 45m into the section where a 6 m. barrier falls if found.

Above the falls the gradient is 10-11% for 300 m. Traces of ASA and little rearing habitat is available. The gradient then increases to 18% and the stream enters another V-notch.

FISH SAMPLING FORM

ADF&G No. 101-80-52 Date 7/11/84 Stream Name _____
 Survey Area _____ H₂O Temp. 10° C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
#1	0945	1055	SS-80,90,85 80,75 CT-95	Section #1

101-80-52

PEAK ESCAPEMENT RECORD

DATE	PINK	CHUM	OTHER SPECIES	REMARKS
8/25/70	300			None Seen
8/28/74	500			
8/13/75	4,000			
8/23/79	4,000			
1980				
8/25/81	3,458			
8/24/82	4,000			

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas _____ 2. Historical Fish PS,SS, ST

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-53

3. USGS Map No. Ketchikan D-6 4. Legal Location R88E, T69S, S-23

5. Latitude and Longitude 55°52'37" 131°52'35" 6. Agency Unit 05

7. Aerial Photo No. 0032,1373,193,9-12-73, 02190 8. MGMT Area K29-722

9. Estimated Flow .2 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical access none observed

12. Temperature Sensitivity and/or origin 5

13. Access 2 14. Stream Temperature _____

15. pH _____ 16. Intertidal Zone a. Gradient 9%

b. Bottom type 1. fines 10 2. gravel/small cobble 30

3. large cobble/boulders/bedrock 60

c. ASA poor - The substrate is very compact

d. Schooling only in Spacious Bay

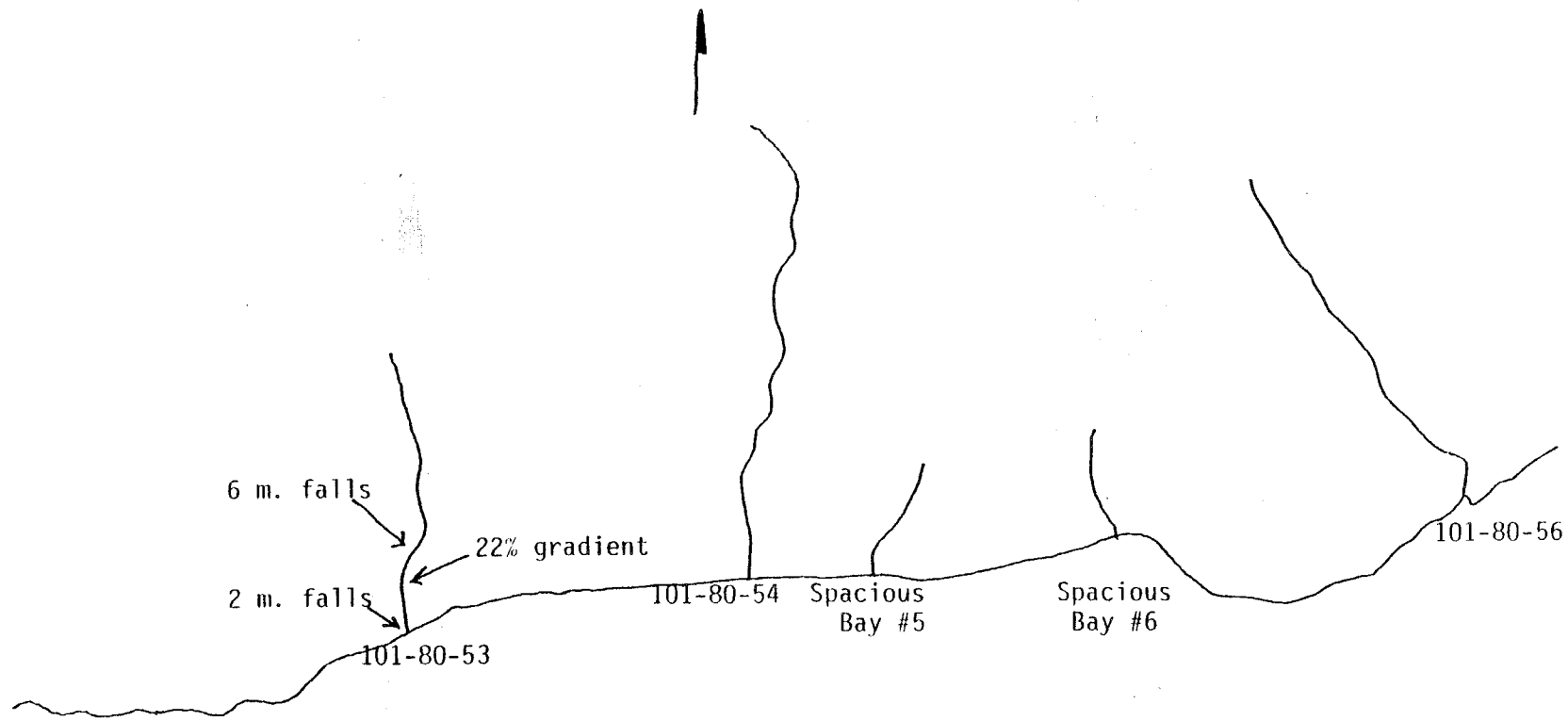
e. Shellfish potential Dungeness crab in bay

f. Anchorage poor - unprotected

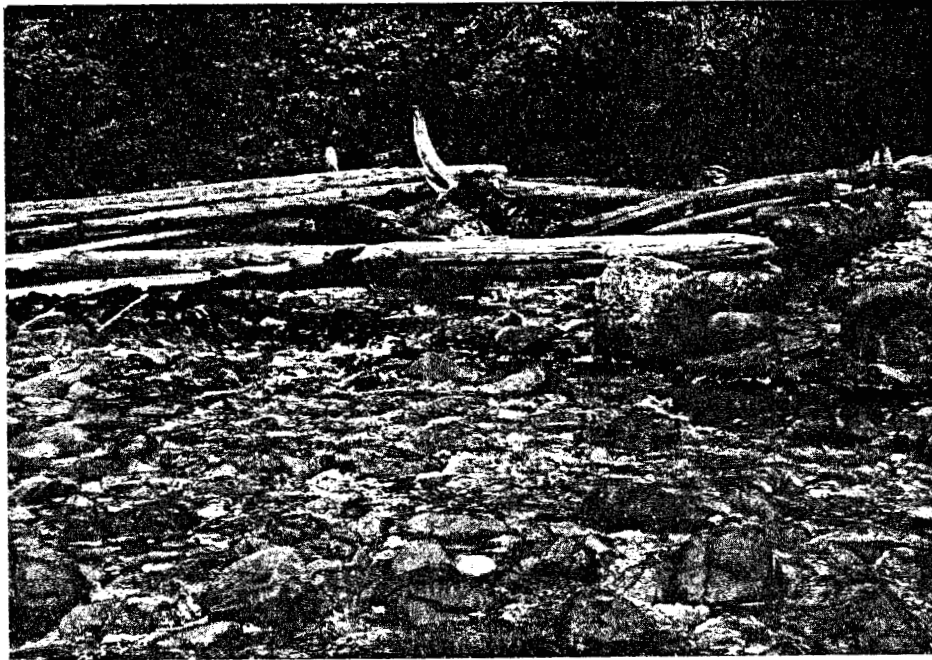
17. Comments A 2 m. falls at the end of the ITZ is a potential barrier to upstream migration. 101-80-53 is limited by a large substrate and a 2 m. falls at the end of the ITZ. If fish do negotiate the falls in the ITZ, a 6 m. falls is present about 200 m. further upstream. Above the ITZ, there is only a trace of good ASA. The substrate is primarily large cobble and boulders. The gradient is 13% increasing to 22%, as the stream enters a V-notch within 75 m. of the beach. The substrate becomes primarily large boulders. There are no undercut banks and little debris to provide cover for rearing habitat. No rearing fish were observed or captured. Above the 6 m. falls, the gradient continues at 12% and the stream leaves the V-notch. The ASA and rearing area values are minimal and no rearing fish were observed.

18. Investigators Burns/Cariello 19. Weather 1

20. Date 7/12/84 -891- 20. Time 1200-1315



SPACIOUS BAY



1. The substrate is large and compact in the ITZ



2. A potential 2 m. falls is present at the mouth
or the stream



3. Typical habitat 50 m. from the ITZ



4. Potential barriers 200 m. above ITZ.

FISH SAMPLING FORM

ADF&G No. 101-80-53 Date 7/12/84 Stream Name _____
 Survey Area _____ H₂O Temp. 10⁰ Bait Braunwager

Trap No.	Time Set	Time Pulled	Species	Comment
#1	1230	1305	0	

BASELINE AQUATIC SURVEY

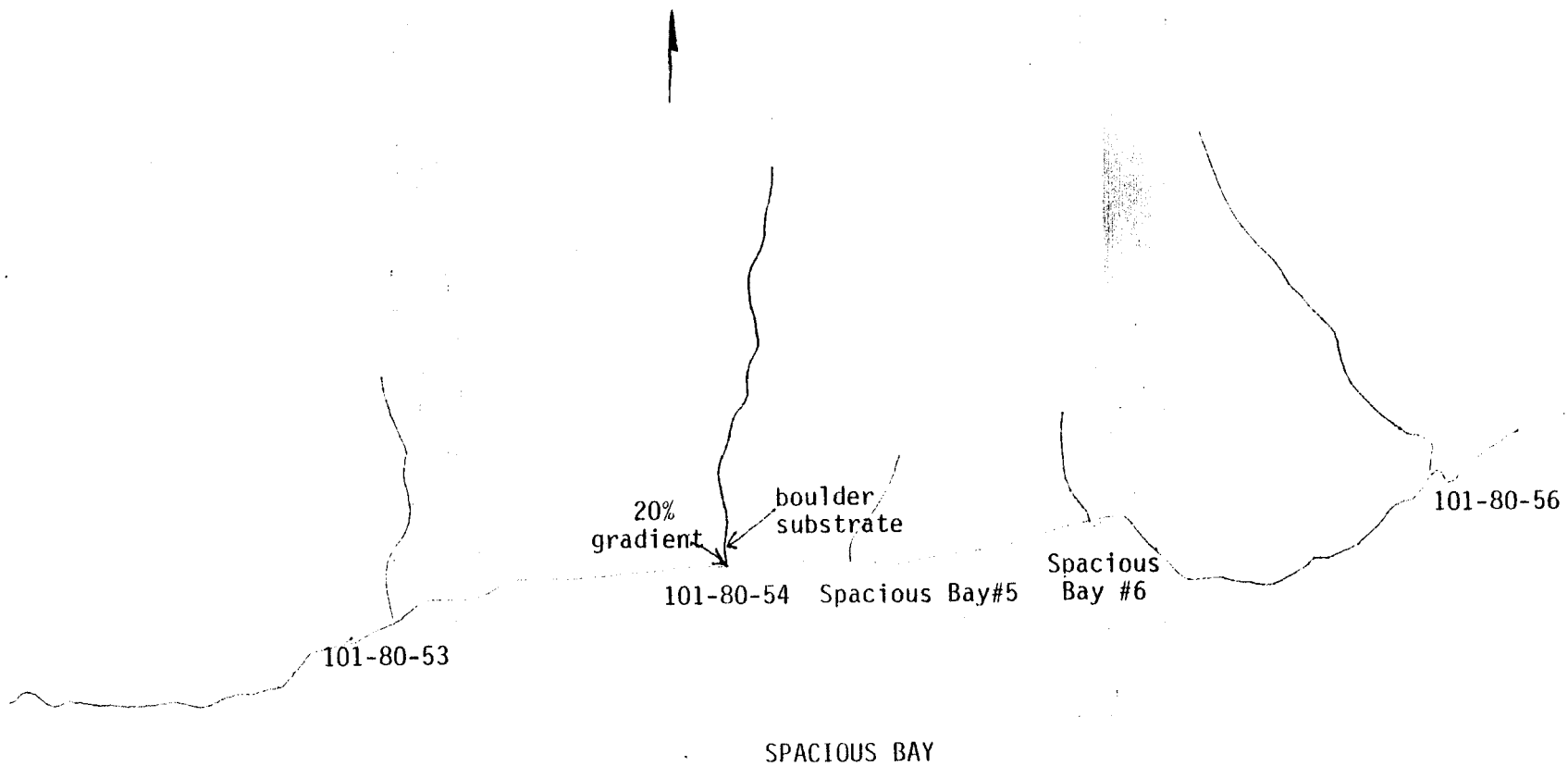
Part I.

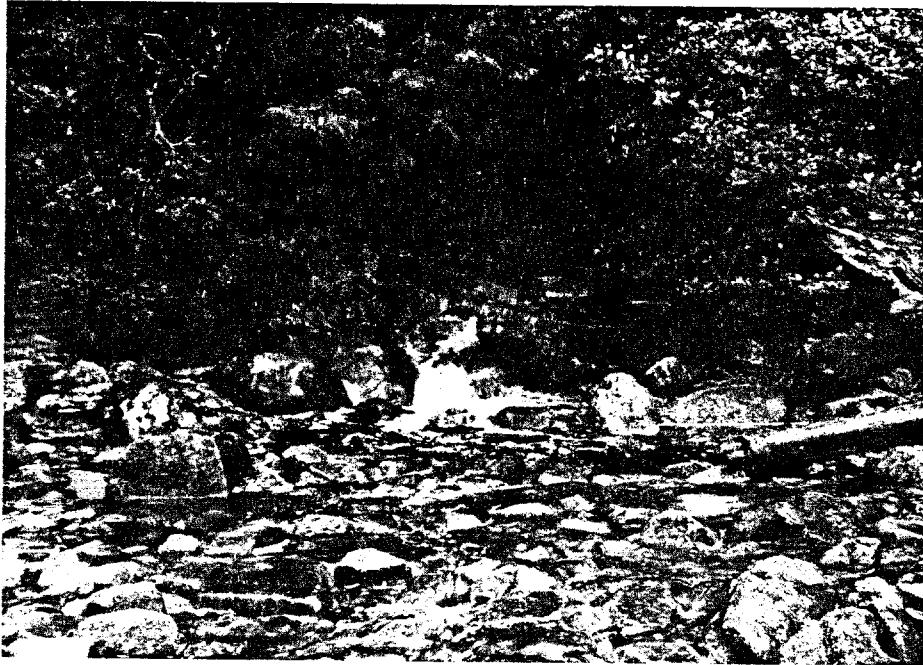
1. Survey Areas _____ 2. Historical Fish PS, ST, SS

Part II.

1. Stream Name _____ 2. ADF&G Catalog No. 101-80-54
3. USGS Map No. Ketchikan D-6 4. Legal Location R89E, T69S, S-24
5. Latitude and Longitude 55°52'21", 131°51'47" 6. Agency Unit 05
7. Aerial Photo No. 0032, 1373, 193, 9-12-73, 02190 8. MGMT Area K29-722
9. Estimated Flow .24 m³/sec 10. Flow Stage 3
11. Land Use a. present none observed b. historical access handlogging
12. Temperature Sensitivity and/or origin 5
13. Access 2 14. Stream Temperature 10°C
15. pH 6 16. Intertidal Zone a. Gradient 10%
b. Bottom type 1. fines _____ 2. gravel/small cobble _____
3. large cobble/boulders/bedrock 100
c. ASA poor
d. Schooling only in Spacious Bay
e. Shellfish potential Dungeness crab in bay
f. Anchorage poor - unprotected at the mouth

17. Comments There is no defined channel in the ITZ. The water fans out between boulders and large cobble. The stream may be inaccessible to fish even at high tides due to the shallow water depth. A 1 meter falls is present in the upper ITZ at the treeline.
101-80-54 is limited by a series of probable barriers in the first 150 m. and a lack of ASA. Even if fish can negotiate the ITZ, the stream offers little habitat. The gradient between 20 and 25% for about 150 m. with several potential debris and or falls barriers. The stream is shallow fast and deep fast in nature and provides little rearing habitat. No rearing fish were observed or captured.
The stream gradient decreases to 10% about 150 m. beyond the ITZ. The width varies between 1 and 2 meters and has many plunge pools. The substrate changes to primarily large cobble, although small cobble and sand are also present. The substrate is covered with a heavy moss growth. Little ASA or rearing habitat is provided.
18. Investigators Burns/ Cariello 19. Weather 1
-896-
20. Date 7/12/84 20. Time 1200-1315





1. Upper ITZ



2. Typical habitat found in stream, 50 m. above ITZ.
The gradient is 20%

FISH SAMPLING FORM

ADF&G No. 101-80-54 Date 7/12/84 Stream Name
 Survey Area H₂O Temp. 10⁰C Bait braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
#1	1200	1230	0	15 m. in from ITZ

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas _____ 2. Historical Fish _____

Part II.

1. Stream Name Spacious Bay #5 2. ADF&G Catalog No. _____

3. USGS Map No. Ketchikan D-6 4. Legal Location R88E, T69S, S-24

5. Latitude and Longitude 55°52'24", 131° 51' 30" 6. Agency Unit 05

7. Aerial Photo No. 0032,1373,193,9-12-73,02190 8. MGMT Area K29-722

9. Estimated Flow .24 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical access none observed

12. Temperature Sensitivity and/or origin 55° 52'

13. Access 2 14. Stream Temperature 10°C

15. pH 5-5-6 16. Intertidal Zone a. Gradient 15

b. Bottom type 1. fines 1 2. gravel/small cobble 10

3. large cobble/boulders/bedrock 89

c. ASA poor

d. Schooling in bay only

e. Shellfish potential crab in Spacious Bay

f. Anchorage poor - unprotected

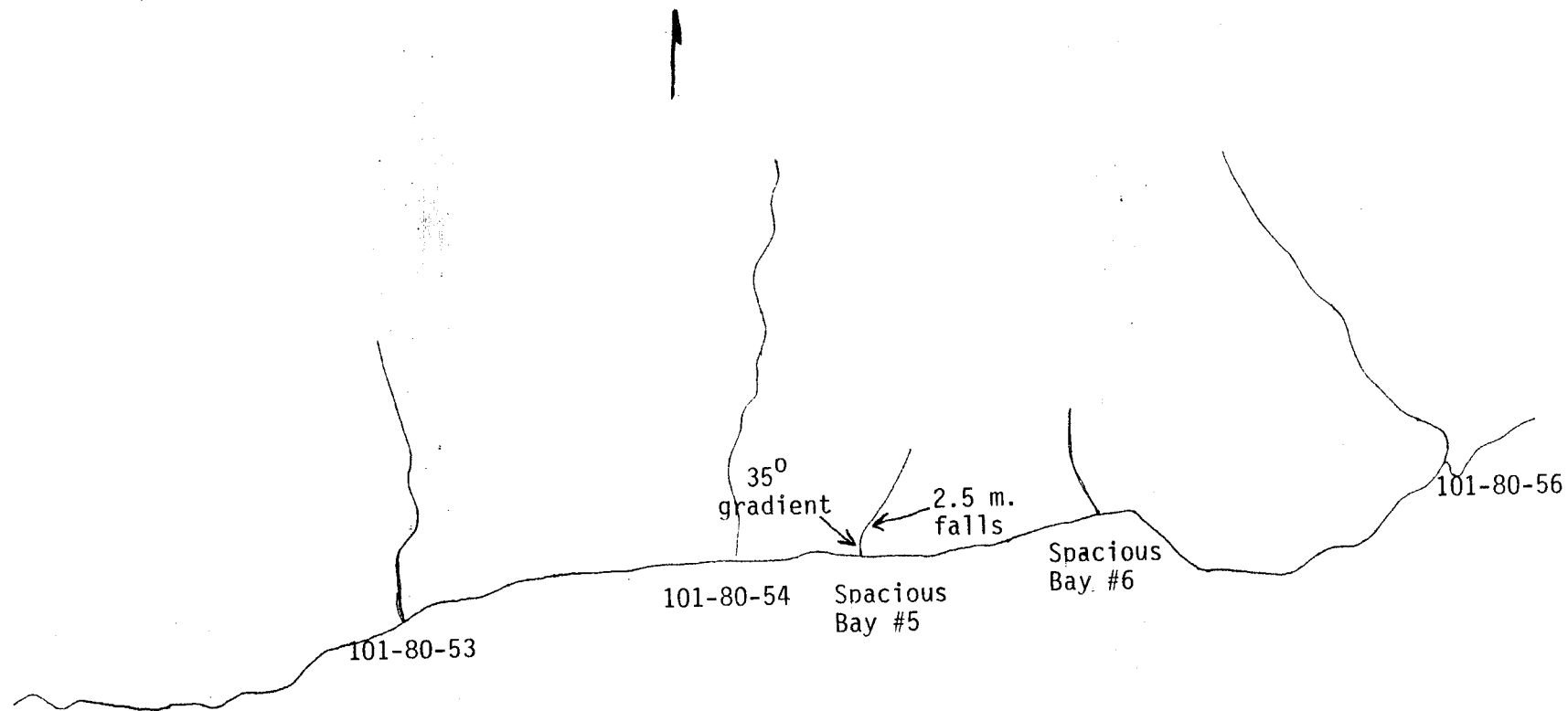
17. Comments A 1 meter falls is present at the end at the ITZ and may make the stream inaccessible even at high tide.

Spacious Bay #5 has little fisheries potential. The gradient increases from 21% to 35% within 25 m. of the beach. The substrate is primarily boulders and provides no real ASA. Little rearing area is provided due to the steep gradient. No rearing fish were observed or captured. Many 1 to 1.5 m. potential barrier falls are present. About 100 m. from the ITZ, a 2.5 m. falls with no pool at the base is a definite barrier. Above the falls, the gradient continues at 15 to 20% with no improvement in the fisheries habitat.

18. Investigators Burns/Cariello 19. Weather 1

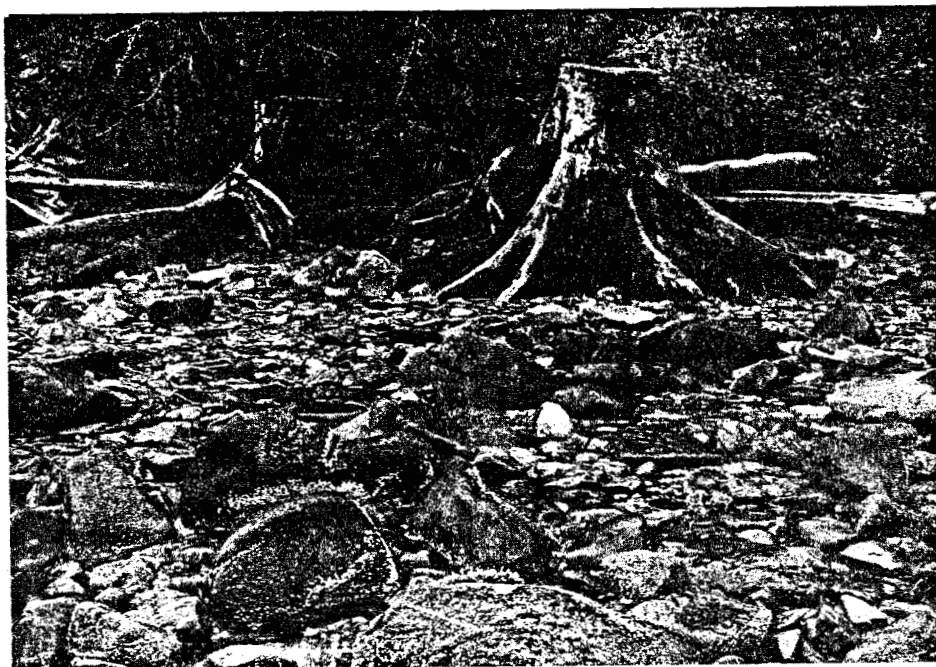
-900-

20. Date 7/12/84 20. Time 1260 - 1620



SPACIOUS BAY

Spacious Bay #5



1. ITZ



2. The gradient is over 20% 10 m. from the ITZ. The habitat remains minimal up to a barrier falls 90 m further.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/12/84 Stream Name Spacious Bay #5
Survey Area _____ H₂O Temp. 10⁰C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
1	1625	1645	Ø	

BASELINE AQUATIC SURVEY

Part I.

1. Survey Areas _____ 2. Historical Fish _____

Part II.

1. Stream Name Spacious Bay #6 2. ADF&G Catalog No. _____

3. USGS Map No. Ketchikan D-6 4. Legal Location R88E,T69S,S-24

5. Latitude and Longitude 55°52'25" 131°51' 6. Agency Unit 05

7. Aerial Photo No. 0032,1373,193,9-12-73,02190 8. MGMT Area K29-722

9. Estimated Flow .24 m³/sec 10. Flow Stage 3

11. Land Use a. present none observed b. historical access logging near mouth

12. Temperature Sensitivity and/or origin 5,4

13. Access 2 14. Stream Temperature 11°C

15. pH 5 16. Intertidal Zone a. Gradient 14%

b. Bottom type 1. fines _____ 2. gravel/small cobble _____

3. large cobble/boulders/bedrock 100

c. ASA poor

d. Schooling in Spacious Bay only

e. Shellfish potential Dungeness crab in bay

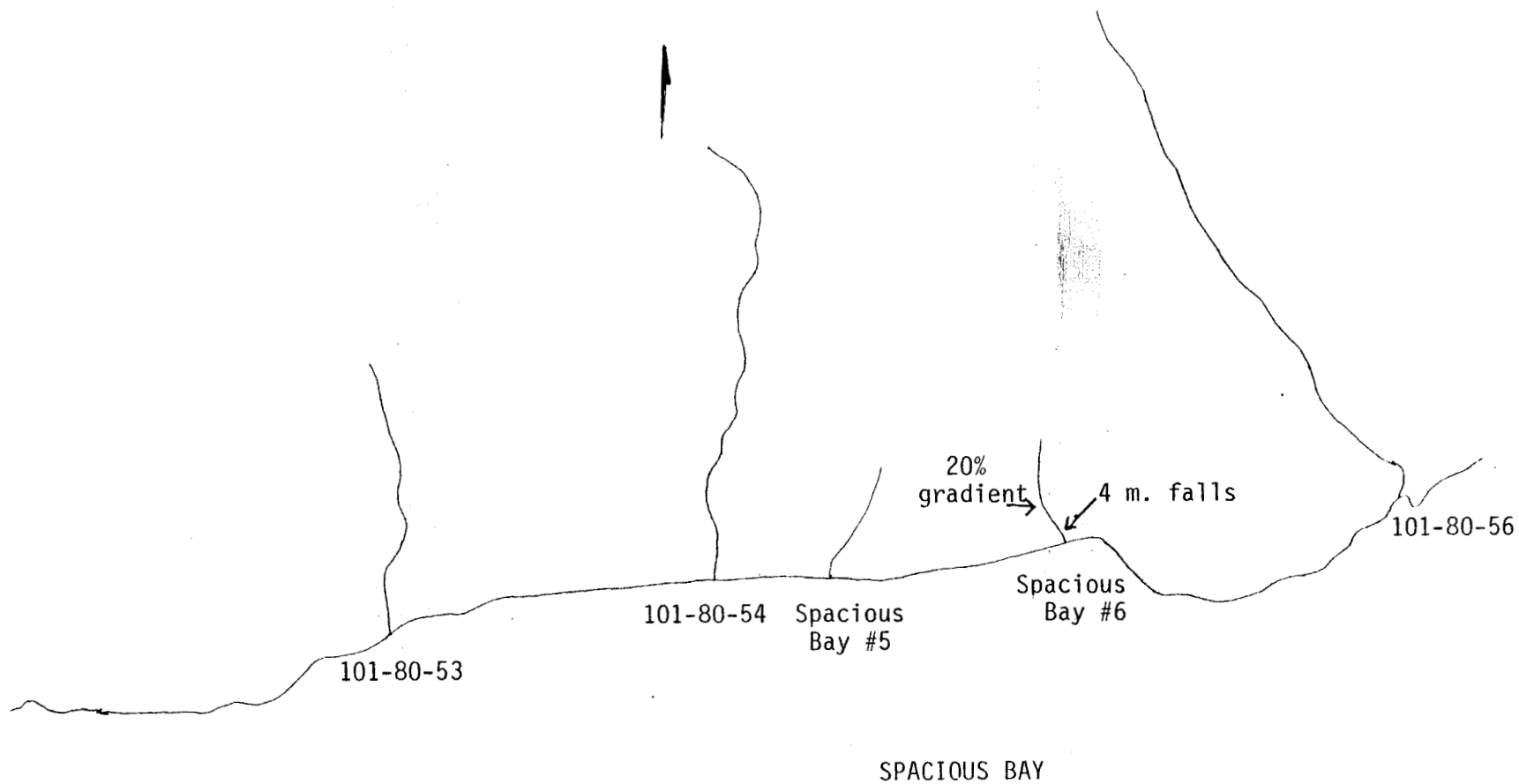
f. Anchorage poor - unprotected

17. Comments Spacious Bay #6 has little fisheries potential. The gradient is 25% up to a 4 m. barrier falls only 30 m. from the beach. No real ASA or rearing habitat is available below or above the falls. The gradient remains 20% above the falls. The substrate is mainly bedrock boulders, and cobble. No rearing fish were observed or captured.

18. Investigators Burns, Cariello 19. Weather 1

-904-

20. Date 7/12/84 20. Time 1530-1615



Spacious Bay #6



1. Large substrate found ITZ



2. Habitat is 15 m. from the ITZ. A 4 m. barrier falls is just around the corner.

FISH SAMPLING FORM

ADF&G No. _____ Date 7/12/84 Stream Name Spacious Bay #6
 Survey Area _____ H₂O Temp. 11°C Bait Braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
#1	1545	1610	Ø	

BASELINE AQUATIC SURVEY

Part I.

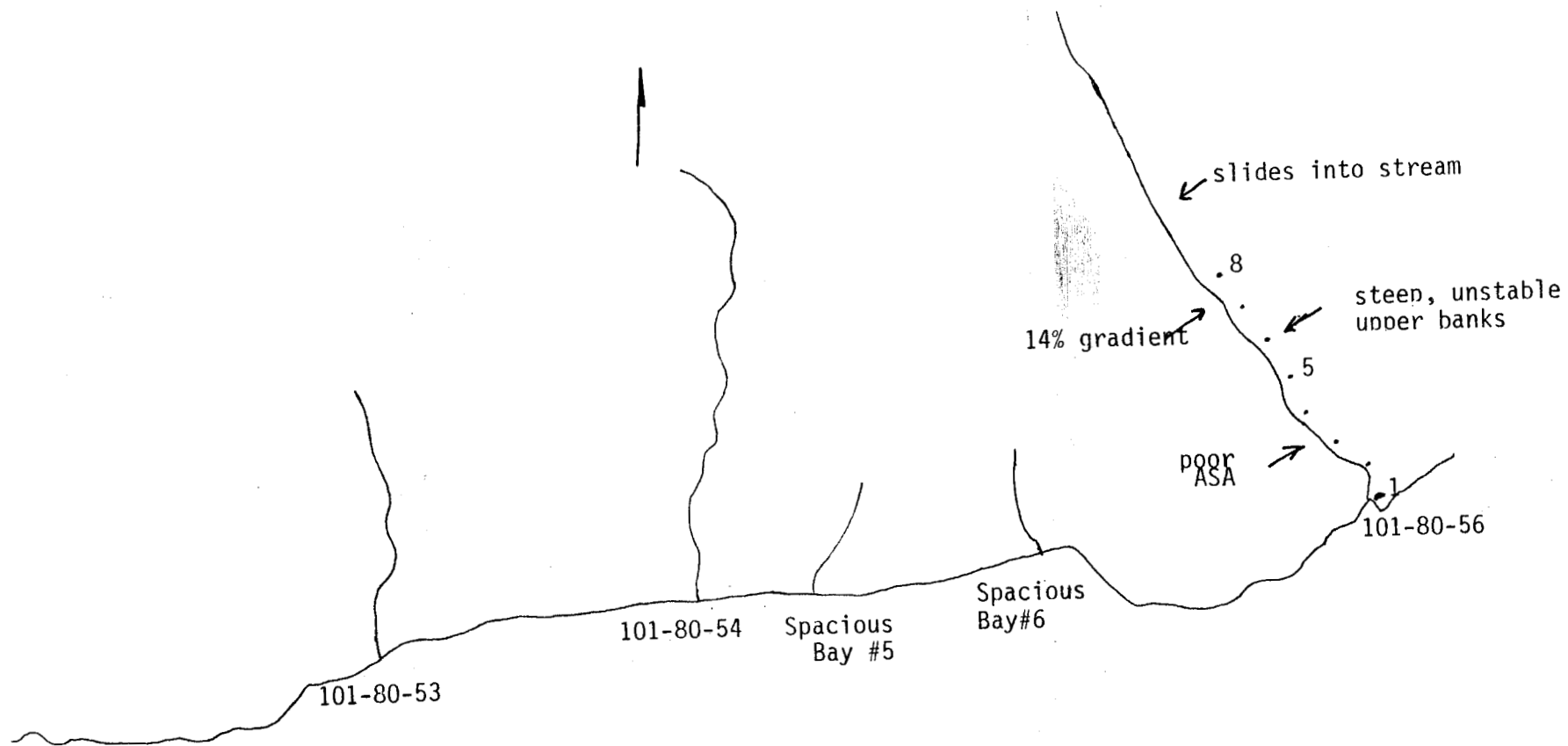
1. Survey Areas A 1-8 2. Historical Fish PS

Part II.

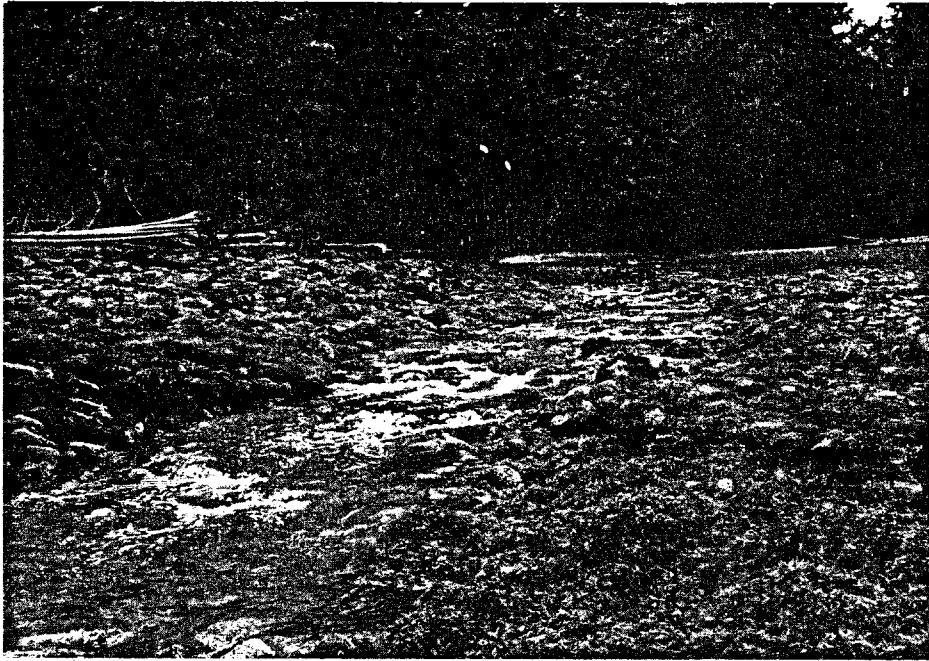
1. Stream Name _____ 2. ADF&G Catalog No. 101-80-56
3. USGS Map No. Ketchikan D-6 4. Legal Location R883E, T69S, S-19
5. Latitude and Longitude 55° 52' 35" 131°50'10" 6. Agency Unit 05
7. Aerial Photo No. 0032,1373,193,9-12-73,02190 8. MGMT Area K29-722
9. Estimated Flow 1m³/sec 10. Flow Stage 3
11. Land Use a. present none observed b. historical access logging
12. Temperature Sensitivity and/or origin 5
13. Access 2 14. Stream Temperature 10° C
15. pH 6.5-7 16. Intertidal Zone a. Gradient 5
b. Bottom type 1. fines 5 2. gravel/small cobble 10
3. large cobble/boulders/bedrock 85
c. ASA poor
d. Schooling only in Spacious Bay
e. Shellfish potential Dungeness in bay
f. Anchorage unprotected at mouth

17. Comments The ITZ substrate is compact and covered by a heavy algae growth. The survey was difficult due to the high water stage the stream was in. 101-80-56 is a steep, swift stream that contains poor quality ASA and rearing area. The substrate is primarily compact boulders and large cobble. The gradient is between 10 and 14% for the length at the survey. The water type was 95% shallow and deep and fast, and provides little rearing habitat. No rearing fish were observed but a cutthroat was captured in a minnow trap. The upper banks were steep and unstable from Section 4 to beyond the end of the survey.

18. Investigators Burns/Cariello 19. Weather 1
20. Date 7/2/84 -908- 20. Time 0830-1130



101-80-56



1. ITZ: The substrate is primarily boulders and covered with a heavy algae growth



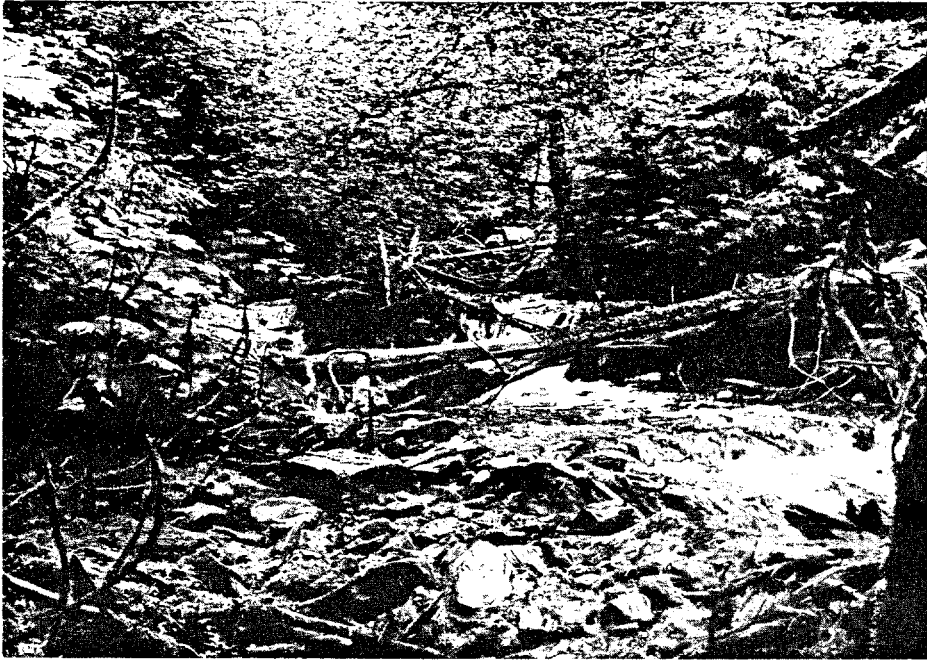
2. Debris obstacle present at the mouth of the stream



3. Section 2: Habitat typical of the entire survey area



4. Whitewater in Section 8



5. Habitat 300 m. beyond the end of survey on Section 8.
The upper right bank is unstable and numerous slides
are present

101-80-56

Section	Length (m)	Width (m)	ASA %	ASA Total	Section	Length (m)	Width (m)	ASA %	ASA Total
1	100	5.5	1	5.5					
2	100	5.5	1	5.5					
3	100	8.0	1	8.0					
4	100	3.6	0	0					
5	100	5.8	0	0					
6	100	7.7	1	7.7					
7	100	5.6	1	5.6					
8	50	4.1	0	0					
TOTAL				32.3					

BASELINE (LEVEL TWO) AQUATIC SURVEY FORM

Stream Name _____ ADF&G No. 101-80-56 Date 7/12/84

1. Reach	1	1	1	1	1	1	1	1
2. Section	1	2	3	4	5	6	7	8
3. Section Length (m)	100	100	100	100	100	100	100	100
4. Gradient	10	13	11	14	14	14	14	14
5. Water Quality	3	3	3	3	3	3	3	3
6. Water Width a. channel	5.5	10.5	8	7	6.6	13	5.6	4.3
b. water	5.5	5.5	8	3.6	5.8	7.7	5.6	4.1
c. special character	1	-	-	-	1	1	1	-
7. Water Type % SS	5	5	-	-	5	5	5	5
SF	85	85	85	85	80	80	80	80
DS								
DF	10	10	15	15	15	15	15	15
8. Undercut Banks (m) left	0	0	0	0	0	0	0	0
right	5	0	0	0	0	0	0	0
9. Debris Cover % small	1	1	0	0	1	2	0	0
large	4	5	5	6	8	10	2	1
10. Riparian Vegetation %	10	10	10	10	10	10	10	10
11. Substrate %:								
a. boulders	69	74	74	84	88	84	84	84
b. cobble	20	20	20	14	10	10	10	10
c. gravel	10	5	5	1	1	5	5	5
d. sand	1	1	1	1	1	1	1	1
e. organic muck								
f. bedrock								
g. other								
12. ASA	1	1	1	0	0	1	1	0
13. Gravel Shape	2	2	2	2	2	2	2	2
14. Streambank Vegetation								
a. percentage	100	100	100	100	100	100	100	100
b. type	B	B	B	B	B	B	B	B
15. Average Depth (cm)	25	20	15	35	35	16	23	35
16. Beaver Activity	5	5	5	5	5	5	5	5
17. Potential Barrier	2	-	-	-	-	-	2	-
18. Aquatic Vegetation								
a. type	1/3	1/3	2/13	2/13	2/13	2/13	2/13	2/13
b. density	3/2	3/2	3/2	3/2	3/2	3/2	3/2	3/2
19. Sampling	Y	-	-	-	-	-	-	-
20. Rearing Area	5	5	0	0	5	5	5	5

21. Comments Section 1: Visibility was impaired by a heavy cloud cover and thick riparian growth on the upper banks. There are signs of logging on both banks. The stream is mainly whitewater rapids with little rearing area or ASA. The substrate is predominately boulders and compact cobble. A small tributary enters from the left bank and some braiding is present. The right bank is unstable for a 30 m stretch.
 Section 2: Devil's club and 40ft. alder are abundant along the bank. A 1 m debris falls is present at the end of the section.

Section 3: The left upper bank gets steep. Large boulders begin appearing in the stream.

Section 4: The right upper bank gets steep also in this section. Both banks continue to be steep for the remainder of the survey.

Section 5: Braiding and large debris are present in Sections 5 and 6. The upper banks show evidence of blowdown and slides. The unstable right bank has pioneer alder growth present throughout the section. The steep gradient does not allow the presence of much rearing area.

Section 6: The right bank continues to be unstable with exposed soil and slides present.

Section 7: The braiding ends in this section. Both upper banks continue to be steep. A 1.5 m. debris falls is present and may be a possible barrier.

Section 8: The survey is discontinued. The gradient continues quite steep and the stream is mainly whitewater with little fisheries habitat. There are several 1.5 m. falls that could be obstacles to fish passage beyond the end at the survey. The gradient continues at 13% for at least 300 m. beyond Section 8. The upper banks are unstable and slides have deposited smaller size substrate suitable for ASA into the stream. No rearing fish were observed in areas where debris provided pools and cover.

FISH SAMPLING FORM

ADF&G No. 101-80-56 Date 7/12/84 Stream Name
 Survey Area H₂O Temp. 10°C Bait braunswager

Trap No.	Time Set	Time Pulled	Species	Comment
#1	0910	1110	1 cutthroat 75 mm.	Section #1
#2	1000	1040	Ø	Section #6

AQUATIC SURVEYS HANDBOOK

BASLINE (Stream). This is a baseline field survey. It is designed to provide adequate baseline and summary information for management of unmanipulated habitats. It provides both measured and estimated information of individual parameters, as well as judgmental summaries on certain aspects of the stream environment. This level will be used for the update of the 1979 Tongass Land Management Plan. The survey is designed to be accomplished quickly and efficiently with a minimum of equipment and field time, yet still provide baseline information about the potential fish production, fisheries habitat, potential high-risk areas to development, and identification of possible enhancement sites.

Baseline surveys are generated by fieldwork and should contain enough information to answer questions about what fisheries habitat there are and relative amounts of it. There should also be adequate information to determine whether potential enhancement or rehabilitation opportunities exist. The data derived at Baseline is generally not statistically reliable within reasonable confidence limits.

Objective. To meet fish habitat management needs for streams not proposed for major land use activities or when time factors and priorities do not allow more intensive surveys.

Standards. Specific standards for procedures to accomplish Baseline are listed below. For quantitative data, they are minimum and for qualitative data, they are maximum. These standards should be interpreted to mean that at the minimum, data collected in the survey shall be at least as accurate as specified, and at least all the parameters listed should be included.

1. Identify the major types of streamside vegetation and fish species in the stream.
2. Visually identify aquatic vegetation in the stream.
3. Subjectively determine the source of water, bank stability along the stream, stream bottom material, streamflow stage, water color, barriers to upstream migration, and water impoundments.
4. Estimate the quality and area of salmonid spawning gravel.
5. Include juvenile salmon rearing area.
6. Include date and climatic conditions at time of survey.
7. Measure the stream gradient to the nearest percent.
8. Measure water width to the nearest $\frac{1}{2}$ meter, with a range finder or tape measure.
9. Establish a system of photographs for the stream.
10. Draw a schematic map for the stream.

11. Write a narrative describing sport fish potential, wildlife observations, land use influences, accessibility, and enhancement potentials.

When to Use. Baseline surveys are used when general observations are needed about the fishery habitat of a specific stream. It provides answers to questions like: 1) Where is the actual streamcourse in relation to habitat, or 2) Approximately how much spawning area is available?

How to Use. The fisheries biologist examines all the data and formulates a general answer. In addition, there are some specific interpretations and analysis that can be derived from the data. Examples of these are:

1. Available spawning area (gravels between 2 - 128 mm in diameter) contained in the survey area. This interpretation should be used with caution, as under no circumstances would any particular species of salmon utilize all that area to an optimum.
2. Amount of pool area.
3. Amount of debris in the survey area.
4. A rough idea of how stable the streambanks are.
5. Water temperature data may be used for tracking entry of different water sources to the stream, groundwater sources should be noted since they are frequently two or more degrees cooler.

Equipment Needed.

1. Baseline Survey Forms
2. Handbook reproduced on waterproof paper.
3. Field notebook
4. Pencils
5. Maps, USGS quads, and aerial photographs
6. 50 meter tape measure
7. Abney level or clinometer
8. Camera with film
9. Minnow traps (6) and bait
10. Tricaine methanesulfonate
11. Dip net
12. Fish measuring ruler (metric)
13. Range finder
14. Pocket altimeter
15. Compass
16. Scientific sampling permit

Procedure. There are several phases of data collection for a baseline survey: 1) preplanning before starting fieldwork, 2) data that is entered once for each survey area, 3) data that is entered once every 100 meters along the stream, and 4) office work to be done after the fieldwork.

Preplanning. Before starting fieldwork, the following information must be entered on Part 1 of survey form.

- | | |
|--------------------|---|
| 1. Survey Areas | Identify areas by letters and the number of sections surveyed. |
| 2. Historical Fish | List species present in escapement data by entering the appropriate species code. |
| | KS - King salmon DV - Dolly Varden |
| | SS - Silver salmon RT - Rainbow trout |
| | RS - Red salmon CT - Cutthroat trout |
| | CS - Chum salmon SM - Smelt |
| | PS - Pink salmon ST - Steelhead |
| | NP - Northern pike BY - Brook trout |
| | CO - Cottids GR - Grayling |
| | LT - Lake trout WH - Whitefish |
| | SB - Stickleback BU - Burbot |
| | OT - Other |

Data Entered Once per Stream Surveyed. The following items should be recorded on the second part of the survey form.

- | <u>Item</u> | <u>Explanation</u> |
|---------------------------|---|
| 1. Stream Name | Record the stream name as listed on the map or as commonly known. |
| 2. ADF&G Catalog No. | Enter appropriate State Fish and Game Catalog Number and sub-numbers for stream surveyed. |
| 3. USGS Map Number | Identify number of USGS Quadrangle containing the system. |
| 4. Legal Location | Identify the range, township, and sections of the subwatershed or survey area. |
| 5. Latitude and Longitude | Record the latitude and longitude to the nearest five seconds for the lower end of the survey area. Use appropriate geodetic scale to interpolate precise latitude and longitude off a USGS quad. |
| 6. Agency Unit | Enter the appropriate land area code as assigned to each agency. |
| | 02 Stikine 10-19 BLM |
| | 03 Chatham 20-29 National Park |
| | 04 Chugach 30-39 State Park System |
| | 05 Ketchikan 40-49 F&WS |
| | 50-59 Native Corp. |
| 7. Aerial Photo Number | If an aerial photo is used, record the flight line, roll, photo, year, and grid. |

8. Management Area Enter the appropriate agency subunit code and VCU number. (List of management area codes to be developed and distributed by each agency).
9. Estimated Flow Use Embury method if feasible, if not estimate.
10. Flow Stage Enter appropriate code for best estimate of flow at time of survey. (See glossary for diagram of terms.)
1 - low, 2 - normal, 3 - high.
11. Land Use
- a. Note any activities associated with man's present use or planned use such as logging, mining, recreation, roads, dumpsites, etc.
 - b. Note any evidence of historical land use such as logging (and approximate year), mining, abandoned cannery sites, etc.
12. Temperature Sensitivity and/or origin Enter appropriate code(s) describing source of water at that point on the stream.
- | | |
|-----------------|-----------------------|
| 1 - lake | 4 - muskeg |
| 2 - glacial | 5 - surface runoff |
| 3 - groundwater | 6 - subsurface runoff |
| | 7 - other |
13. Access Enter up to two codes from this list:
- 1 - Roaded (list road number)
 - 2 - Unroaded
14. Stream Temperature
15. Ph
16. Intertidal Zone If there is an intertidal zone within the survey area, take following data:
- a. Gradient in the intertidal zone measured with a clinometer or abney level. Record to nearest percent.
 - b. Bottom type - estimate:
 - (1) % fines (2 mm or smaller)
 - (2) % gravel/small cobble (2-128 mm)
 - (3) % large cobble/boulders/bedrock (128 mm)
- The sum should equal 100%
- c. Available spawning area: estimate quality as poor, fair, good, or excellent.

- d. Note yes or no whether schooling areas are present in the estuary or lower sections of the streams; if yes, describe in comments.
 - e. If survey coincides with low tide, note yes or no, shellfish potential and if yes, describe in comments.
 - f. Describe known anchorage or ones used during the survey and their exposure.
17. Comments and Narrative Add any comments that are important to the aquatic resources or required to answer other items on the list. Generalize about the quality and quantity of the stream's spawning and rearing habitat.
18. Investigators Enter names of people doing the fieldwork.
19. Weather Conditions Enter the appropriate code:
- | | | |
|-----------|------------|-------------------|
| 1 - rain | 3 - cloudy | 5 - fog |
| 2 - clear | 4 - snow | 6 - partly cloudy |
- If there is an unusual situation, enter in comments.
20. Date Enter numerical designation for Month/Day/Year.
21. Time Record in military time.

Photos. Take one black and white print photo at each survey area and every readily identifiable change in habitat type, unique situation, barrier falls, and the intertidal area. Photos will be taken facing upstream unless specifically noted in the photo record.

Data Entered Once Every Section

1. Reach Number each successive reach, defined as section of stream of similar gradient, substrate, and bank type. Boundaries between reaches may be definite like a migration barrier, or they may be very subtle gradual changes of habitat.
2. Section Number The stream is divided into sequential samples every 100 meters. Numbering should start at the furthest downstream point and increase consecutively upstream. Sections in the intertidal zone should be labeled with the code "I".
3. Section Length (m) 100 m in length. Note if less than 100 m.
4. Gradient Measure gradient over the section being surveyed with a clinometer, or abney level. Record to nearest percent.

5. Water Quality

Enter appropriate color code:

- 1 - clear 3 - light tan
- 2 - glacial 4 - tan

6. Water Width

- a) Record active channel width to the nearest 1/10 meter.
- b) Record water width to the nearest 1/10 meter. Width of multiple channels should be recorded separately.
- c) Identify 1) channel braiding 2) back-water sloughs and 3) off-channel areas.

7. Water Type. Partition each section by indicating the percentage of each of the following water types:

SS - shallow (<50 cm deep)
 slow (<30 cm/sec)

SF - shallow (<50 cm deep)
 fast (>30 cm/sec)

DS - deep (>50 cm deep)
 slow (<30 cm/sec)

DF - deep (>50 cm deep)
 fast (>30 cm/sec)

8. Undercut Banks

Record length of undercut bank (in meters) for each bank.

9. Debris Cover

Percent area covered by debris. Indicate whether the debris is composed of small (10 cm diameter) or large (10 cm diameter) materials. This includes both suspended and submerged debris.

10. Riparian Vegetation

Percent of area covered by riparian vegetation. (This is vegetation directly above the water surface providing cover for fish).

11. Substrate

Indicate the percent of each stream bottom substrate type according to the following:

- 1) boulders (250 mm, 10")
- 2) cobble (65-250 mm, 2.5-10")
- 3) gravel (2-64 mm)
- 4) sand (0.1-2.0 mm)
- 5) organic muck
- 6) other, coded as (a) bedrock (b) sunken log (c) other

12. ASA Percent available spawning area.
13. Gravel Shape Indicate gravel shape as:
- 1) flat
 - 2) angular
 - 3) round
14. Streambank Vegetation Quality describe the upland or upper stream-bank vegetation, other than the canopy, coded as follows:
- A. Flood plains-spruce/devils club/alder/cottonwood/salmonberry/stink current
 - B. Footslopes (not flooded, good containment)
- Hemlock, Blueberry
 - C. Edge of Muskegs
Blueberry (dense)
Sedge
Hemlock (sparse)
Lodge pole pine
Crowberry
Deer cabbage
 - D. Unstable ground
Alder/Salmonberry
Hemlock/alder/salmonberry
Muskeg
Sedge
Maidenhair Fern
Liverwort
15. Average Depth Measure the average depth (cm) of the stream at the Section site.
16. Beaver Activity Enter the appropriate code:
- 1 - active beaver dam
 - 2 - inactive beaver dam, good repair
 - 3 - inactive beaver dam, poor repair
 - 4 - old dam, little effect on stream
 - 5 - no beaver activity
 - 6 - beaver activity, but no dams
 - 7 - old beaver activity, but no dams
17. Potential Barrier 1) Code as:
- | | |
|----------------|----------------|
| 1 - velocity | 4 - beaver dam |
| 2 - falls | 5 - manmade |
| 3 - debris jam | 6 - other |

Photograph the barrier and describe it in the Comment Section.

18. Aquatic Vegetation

1) Type of aquatic vegetation -

Enter as:

- 1 - mosses
- 2 - filamentous algae
- 3 - periphyton
- 4 - vascular plants

2) Density of Aquatic Vegetation -

Enter as:

- 1 - dense (abundant vegetation on rocks or over the entire area)
- 2 - medium ($\frac{1}{2}$ of all rocks with vegetation)
- 3 - sparse (vegetation seldom observed)

19. Sampling

Indicate whether sampling was done in corresponding section.

20. Rearing Area

Estimate percent of the sample section which is good salmonid rearing area. Describe qualitatively the rearing habitat under comments.

21. Comments

Office Work Done After Fieldwork. After completing fieldwork, the following things should be done to the data in office.

1. Diagrammatic Map

Draw a single line schematic map using the information from the survey. The scale should be 4" to the mile at a minimum. One way to do it is trace the streamcourse over an aerial photo, then mark on the map:

- a. Notations marking boundaries of the 100 m sections.
- b. Upper limits of spawning area if known.
- c. Barriers.
- d. Upper limits of anadromous habitat if known.
- e. Obvious soil hazard conditions such as V-notches, slumps, mass wasting, blue clay, braided stream channels, and wind-throw areas as they relate to the stream.

- f. Water flow direction.
 - g. Where all tributaries enter.
2. Narrative
- Write a general narrative highlighting:
- a. Special entries on the diagrammatic map.
 - b. Summarizing anything unusual from the comments sections.
 - c. Generalize about the quality of spawning and rearing habitat.
 - d. Explain any deviations from the prescribed survey procedure.
3. Photos
- a. Mount photos on paper and type a clear legend under each one. Include in the legend:
 - (1) date
 - (2) survey area by river mile
 - (3) section number
 - b. Establish a filing system for the negatives.
4. Binding
- Arrange forms and photos for an entire stream or survey area into a booklet. Put narrative first, then schematic map(s), forms in sequential order with its accompanying photos. If the stream is divided into survey areas, arrange all forms relating to Section A first, followed by B, etc.

Preliminary IRI Data

- 1. Section Number Record the corresponding Baseline Section Number.
- 2. Channel Type
- 3. Riparian Vegetation Class Insert Riparian Vegetation I.D. Legend here.
- 4. Incision Depth For all channel types measure the slope length from the lower bank/upper bank boundary to the next discernable slope break (terminus of the upper bank). A range finder or stadia rod is used to make this measurement.

5. Lower Bank Composition

After digging into the lower bank in several places, indicate the percent of each stream bank substrate type according to the following:

- a) Bedrock or boulders (10 in)
- b) Rubble (5.0 in to 10.0 in)
- c) Cobbles (2.5 in to 10.0 in)
- d) Decomposed organic material
- e) Gravel (2.0 mm to 2.5 in)
- f) Sands & silt (2.0 mm)

6. Bed Substrate Composition

Indicate the percent of each stream bottom substrate type according to the following:

- a) Predominantly bedrock and boulders
- b) Subangular to rounded rubble (5.0 - 10 in) and cobbles (2.5 - 5.0 in)
- c) Course gravel (1.0 - 2.5 in)
- d) Mixed fine gravels and sands
- e) Silt-clay deposits in active flow

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